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December 1989

Oregon Wilderness

Environmental Impact Statement

Volume III

Includes Appendices for all WSAs beginning with OR-2 plus OR-3-114

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Appendix to the Wilderness Environmental Impact Statement for Oregon

Malheur River/Bluebucket Creek Wilderness Study Area (OR-2-14)

1. Introduction

General Description of the Study Area

The Malheur River/Bluebucket Creek Wilderness Study Area (WSA) is located 35 miles northeast of Burns (about 11 miles northwest of the community of Drewsey) in Harney County (see Map 1). The WSA is 21 miles north of U.S. Highway 20.

The study area contains 5,560 acres, all of it public land (see Map 2). The area is shaped roughly like a horseshoe, with an extremely irregular boundary configuration. The boundary lines on the south, west and northeast are formed along legal subdivisions adjacent to private land. Part of the northern boundary line abuts the Malheur National Forest, while the southeastern boundary line is formed by a road. Also forming part of the boundary are two small dead-end roads, one which enters the WSA from the north for 2 miles; the other penetrates the area for less than 0.5 mile from the east. The road that forms the southeastern boundary line and the two dead-end roads that enter the WSA and form additional segments of the boundary line are all low standard dirt roads.

The WSA's topography is primarily a high tableland, deeply cut by two major drainages: the Middle Fork of the Malheur River and Bluebucket Creek. The Middle Fork of the Malheur River is a perennial stream flowing from north to south through about 2.25 miles of public land.

The Middle Fork of the Malheur River Canyon is rugged and steep, with a depth of 600 feet in the north and 800 feet in the south. The canyon's width varies from 0.5 to 1 mile. Bluebucket Creek, also a perennial stream, flows east to west, joining the Malheur River near the center of the WSA. Basalt rimrock form the upper edges of the Bluebucket Creek Canyon walls which slope sharply to the bottom of the drainage.

West of the Malheur River Canyon, in the northern portion of the WSA, the terrain rises gradually to an elevation of 5,200 feet, the highest point in the WSA. This part of the study area is characterized by rolling hills and several small intermittent streams which drain east into the Middle Fork of the Malheur River.

Battle Mountain, a relatively flat-topped plateau edged with rimrock, forms the southwestern corner, or "leg" of the study area. The southern end of this plateau slopes down toward the southern boundary line where the WSA reaches its lowest elevation of 3,900 feet.

Like Battle Mountain, Moffet Table (east of the river and south of Bluebucket Creek) is a relatively flat, rimrock-edged plateau which forms the southeastern leg of the study area.

The WSA contains a variety of vegetation. The most common species are big sagebrush, juniper, mountain mahogany and ponderosa pine.

Interrelationships

The Malheur River/Bluebucket Creek WSA abuts the Malheur National Forest along the WSA's northern boundary line.

A portion of the WSA, including all of the land along the Malheur River within the WSA, is in a power site reserve which identifies the land for potential water power and storage development. This "reserve" is scheduled for review in the next few years, which may lead to its revocation. Power site development is not foreseen and therefore not discussed further.

The WSA is located within ODFW's Malheur River Wildlife Management Unit which contains 2,812 square miles of land. The WSA supports a summer population of an estimated 75 deer, 15 antelope and five elk and a winter population of 35 elk. ODFW has not set management objectives for antelope, but has a management objective of 600 elk and 13,700 wintering deer and 10,500 summering deer for the Malheur River Wildlife Management Unit.

ODFW conducts two population surveys within the WSA. One survey involves a census of big game, while the other is concerned with fish populations. The big game survey is done biannually, in the spring and fall. The fish survey is done periodically, every 3 to 5 years. Both programs use aircraft for observation or access. The goal for nongame wildlife is to maintain populations of naturally-occurring species at self-sustaining levels. The management objective for fish is to manage for wild trout by maintaining the genetic integrity of the native stock and the habitat required for wild trout populations (see Map 2). The proposed action for this WSA conforms with ODFW management objectives for all species.

The U.S. Department of Agriculture conducts a predator-control program within the southern portion of the WSA near the base of Moffet Table and Battle Mountain. The program consists of aerial shooting of coyotes to reduce predator damage to livestock.

Harney County has not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study and EIS planning, scoping and public review process. These issues concern both the effects of wilderness designation on existing and potential land uses or resources in the WSA, as well as the effects of existing and potential land uses or resources on wilderness values. Land uses or resources raised as issues specifically for this WSA include:

- impact on wilderness values,
- impact on potential timber harvest,
- impact on exploration and potential development of energy and mineral resources,
- impact on mule deer, elk, sage grouse, redband trout and nongame wildlife and habitat,
- impact on livestock grazing use levels, and
- impact on recreation use levels.

No other issues specific to this WSA were raised by BLM or the public.

2. Description of the Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made.

The following alternatives are analyzed:

- all wilderness
- no wilderness/no action (proposed action)

The enhanced wilderness alternative is not analyzed for this study area because the primary opportunity to enhance wilderness values by closing the 2.5 miles of dead-end roads which penetrate the WSA would not provide an alternative substantially different from the all wilderness alternative.

A partial alternative is not analyzed because eliminating conflicts between wilderness values and other developable resources by recommending part of the area nonsuitable would not leave an area sufficient in size to retain wilderness values and meet WSA criteria.

All Wilderness

The all wilderness alternative would recommend all 5,560 acres of the WSA suitable as wilderness (see Map 2). The two dead-end roads, totaling 2.5 miles, would remain open to vehicle use.

Energy and Mineral Development Actions

Wilderness designation would close 5,560 acres of public land within the WSA to all forms of appropriation under the mining and mineral leasing laws. Generalized geological information indicates a moderate potential for the occurrence of oil and gas, based on favorable source and host rocks beneath the thick cover of tertiary basalts. However, there are no confirmed deposits of sufficient size to merit exploration and development.

Diatomite has a moderate potential for occurrence in portions of the WSA; however, there are insufficient data and evidence to give confidence to this rating. There are no known deposits of sufficiently large ore bodies that would merit development. There is a producing diatomite mine in the region, with ample reserves, leading to the conclusion that exploration and development of the suspected diatomite deposits within the WSA would not occur.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Construction of 2 miles of fence is proposed to enhance riparian and redband trout habitat by controlling livestock use along the Middle Fork of the Malheur River and Bluebucket Creek.

Livestock Management Actions

Livestock grazing use would remain at the current estimated use-level of approximately 650 AUMs in the portions of the three grazing allotments located within the WSA. The seasons of use and distribution of AUMs for all three allotments are as shown in Table 4.

Vehicle use for livestock management on 4 miles of ways would be precluded. Management of livestock and maintenance of 1.75 miles of fence would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years for maintenance of the six existing reservoirs and three developed springs.

Wood Products Harvest Actions

Wood products harvest of an estimated 1.5 Mbf (average annual sustainable yield) from 22 acres of commercial forest land would be precluded under this alternative. The 22 acres of commercial forest would be removed from the overall programmed timber harvest base for the Burns BLM District.

Recreation Management Actions

The entire 5,560 acres of WSA would be closed to motorized vehicle use. Presently, 2,000 acres of the WSA are designated closed to off-highway vehicle use under the current land use plan. Current recreational use is estimated to be 100 visitor days per year.

No Wilderness/No Action (Proposed Action)

The no wilderness/no action alternative would recommend the entire WSA nonsuitable as wilderness. It represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

All of the 5,560 acres in the WSA would be open to energy and mineral exploration and development. Generalized geological information indicates a moderate potential for the occurrence of oil and gas, based on favorable source and host rocks beneath the thick cover of Tertiary basalts. Due to the lack of direct geological evidence, no oil and gas leases, no known developable deposits and the thick covering of tertiary basalts, no exploration or development is projected.

Diatomite has a moderate potential for occurrence in portions of the WSA; however, there are insufficient data and evidence to give confidence to this rating. There are no known deposits of sufficiently large ore bodies that would merit development. There is a producing diatomite mine in the region, with ample reserves, leading to the projection that exploration and development of the suspected diatomite deposits within the WSA would not occur.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Under this alternative, a stream habitat improvement project would be completed in 2.25 miles of the Middle Fork of the Malheur River. This project would consist of placing approximately 250 boulders in the stream via the use of helicopters. Construction of 2 miles of fence is proposed to enhance riparian and redband trout habitat by controlling livestock use along the Middle Fork of the Malheur River and Bluebucket Creek.

Livestock Management Actions

Livestock grazing use would remain at the current estimated use level of approximately 650 AUMs in the portions of the three grazing allotments located within the WSA. The seasons of use and distribution of AUMs for all three allotments are as shown in Table 4.

Vehicle use for livestock management and maintenance on 1.75 miles of fence, six existing reservoirs and three developed springs would continue on the existing 4 miles of ways and 2.5 miles of dead-end roads.

Wood Products Harvest Actions

The availability of 22 acres of commercial forest for wood products harvest would be retained under this alternative. The 22 acres, capable of producing an estimated 1.5 Mbf average annual harvest yield, would be retained in the overall programmed timber harvest base for the Burns District.

Recreation Management Actions

Vehicle use would continue on the existing 4 miles of ways and 2.5 miles of dead-end roads in the 3,560 acres of the WSA not closed to vehicle use under the current land use plan. The 2,000 acres in the WSA closed to ORV use under this land use plan would continue to be closed. Current recreation use is estimated to be 100 visitor days per year.

Summary

Table 1 summarizes the projected management actions under each alternative.

Table 2 summarizes the environmental consequences of each alternative.

3. Affected Environment

This section discusses only those activities or resources which influence the character of the study area, or that may be affected by the alternatives.

Wilderness Values

Naturalness

Malheur River/Bluebucket Creek WSA is in a relatively natural condition. None of the unnatural features within the study area are substantially noticeable and most of the features can be seen from only small portions of the WSA.

The WSA contains 19 developments, which influence approximately 7 percent of the study area. Of this total there are six reservoirs, three developed springs, five ways totaling about 4 miles, five fences totaling about 1.75 miles and two dead-end roads totaling 2.5 miles.

The northwest third of the WSA contains four of the six reservoirs, the three developed springs, 3.5 miles of ways and 2 miles of a dead-end road. Even though there are many developments in this area, the topographic and vegetative screening help to limit the area of influence.

The area of past timber harvest is only visible from the immediate area, as vegetative screening limits the area of influence. This harvest took place 32 years ago, and vegetation has reestablished in the vicinity.

The fences in Bluebucket Creek Canyon and north of Battle Mountain Ridge are well screened by topography and vegetation, while the fences on Moffet Table and on Battle Mountain plateau occur in relatively flat terrain and lack sufficient vegetative screening.

A reservoir on the east side of Moffet Table can be seen from the slightly higher land around it. A way, about 0.12 mile in length, leads to the reservoir and is relatively unnoticeable.

A reservoir on the west side of Battle Mountain plateau can be seen from a ridge to the northeast. A way, less than 0.5 mile in length, leads to this development.

Outside sights and sounds are numerous, but do not have a dominating affect on the study area. The primary sources of outside sights and sounds are the boundary roads and fences. Additionally, several reservoirs, ways, ranching activity in the valley to the south and a ditch along the Middle Fork of the Malheur can be seen from within the WSA.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

Opportunities for solitude in the Malheur/Bluebucket Creek WSA are outstanding. The opportunities are enhanced by topographic and vegetative screening, but are limited by the size and configuration of the WSA.

The northern plateau has diverse topography with rugged side drainages, which provide good topographic screening. The Malheur River Canyon and Bluebucket Creek Canyon, coupled with their intermittent drainages and steep side slopes all serve to provide numerous screening opportunities. The flat southern plateaus do not provide any topographic screening.

Vegetative screening, which enhances solitude, occurs in Bluebucket Creek and portions of the Malheur River Canyon. There are scattered areas of vegetative screening on the northern plateau, but Moffet Table and Battle Mountain plateau contain very limited vegetative screening.

Size and configuration of the WSA have an impact on opportunities for solitude and primitive and unconfined recreation. The irregular horseshoe shape would restrict movement of a visitor in the WSA. The two narrow “legs” in the south are plateaus situated on either side of private land along the Middle Fork of the Malheur River. These circumstances would tend to concentrate visitor use in certain areas (primarily the drainages) and reduce the ability of the visitor to find a secluded spot on the southern plateaus.

The area provides outstanding opportunities for primitive types of recreation. These activities include day hiking, camping, backpacking, fishing, hunting, sightseeing and photography.

Though limited in size, the WSA provides outstanding opportunities for day hiking. Major attractions are the Middle Fork of the Malheur River and Bluebucket Creek. Hikers would use a drainage on the northeast side of Moffet Table to reach Bluebucket Creek. A challenge to the hiker, this entry drainage is steep, interesting and heavily vegetated.

These features would also be attractive to the backpacker and camper. Level areas suitable for camping are found along the Malheur River and in a few places along Bluebucket Creek. Water is available throughout the study area. The small size of the WSA would limit most trips to l-2 days.

Opportunities for fishing are fair along the Middle Fork of the Malheur River. Fishing opportunities would be limited to about 2.25 miles of river, because an angler would encounter private land on both the northern and southern WSA boundary lines. Bluebucket Creek supports fewer, and smaller, trout than the Malheur River, but it provides a fair opportunity for fishing.

Game species which can be hunted include mule deer, elk, antelope and upland game birds. Opportunities for deer hunting are good, but they are limited by the small size of the area. Elk hunting opportunities range from poor to fair and are associated with Malheur National Forest lands to the north. Antelope hunting opportunities are fair. Of the several upland game species present, hunting for blue grouse and ruffed grouse provide the best opportunities.

Opportunities for sightseeing and photography are also outstanding in the WSA. Beautiful terrain can be seen both within and outside the WSA. The rugged rimrock-lined Middle Fork of the Malheur River Canyon and Bluebucket Creek Canyon, with their diverse vegetation, provide many subjects for photography.

Special Features

Wildlife values are the special features of this WSA. The area contains redband trout, a native fish with limited range, and a sage grouse strutting ground, with accompanying nesting sites. Redband trout and sage grouse are both candidates for Federal listing under the Endangered Species Act.

Diversity in National Wilderness Preservation System (NWPS)

According to the Bailey-Kuchler system of classifying ecosystems, the WSA is in the Intermountain Sagebrush Province and the potential natural vegetation is sagebrush-steppe.

Nine plant communities listed in the Ochoco, Blue and Wallowa Mountains section of the Oregon Natural Heritage Plan occur in this WSA. On the tablelands, the communities are big sagebrush/bunchgrass, low sagebrush/ bunchgrass and rigid sagebrush scabland. On the slopes and hillsides, the communities are western juniper/bluebunch wheatgrass, western juniper/big sagebrush, ponderosa pine/bitterbrush/bunchgrass and a ponderosa pine/ bunchgrass community, with separate areas of Idaho fescue and bluebunch wheatgrass. A mountain mahogany/bunchgrass community is scattered throughout the area, and along the streams the community is a low-elevation riparian forest with cottonwood, hawthorne and alder.

The study area is within five hours' driving time of two standard metropolitan statistical areas with populations over 100,000: Boise, Idaho and Richland/ Kennewick/Pasco, Washington.

Energy and Mineral Development

The geology, energy and mineral resources of the Malheur/Bluebucket Creek WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, correlating rock units in the WSA with similar environments in areas known to contain mineral resources and by evaluating a geochemical sampling program conducted by BLM. Technical details of the evaluation are in a mineral resources assessment report, "Castle Rock Geologic Resource Area (GRA), Grant, Harney and Malheur Counties, Oregon," prepared by TERRADATA, a consulting firm under contract with BLM.

The WSA is within the Castle Rock GRA which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level). A description of the rating system is provided in the Statewide EIS volume.

Table 3 shows the energy and mineral potential classifications in the study area. Map 4 shows that portion of the WSA rated moderate for diatomite.

Surface rocks in the WSA are mostly Tertiary basalt flows, overlain by tuffaceous sedimentary rocks, which in turn are capped by the younger basalt flows from Moffet Table and Battle Mountain. Very little is known about the underlying pre-tertiary rocks.

Energy Resources

The entire WSA has a moderate potential for the occurrence of oil and gas, based on favorable source and host rocks present beneath the thick cover of tertiary volcanics and sediments. There were no oil and gas or geothermal leases in the WSA as of October 16, 1987.

Mineral Resources

Sedimentary rocks beneath the younger basalt flows in the WSA are rated as having a moderate potential for the occurrence of diatomite. Significant deposits of diatomite occur in similar sedimentary rocks southeast of the WSA. During a brief field examination, no exposures of diatomite were observed in the WSA. There were no mining claims in the WSA as of October 16, 1987.

Vegetation

In the Malheur River/Bluebucket Creek WSA, distinctive types of vegetative communities are associated with the tables or plateaus, the slopes, the steep hillsides and the riparian areas.

There are three areas of tableland. The northern area is a big sagebrush/low sagebrush/bunchgrass type. The Battle Mountain Table is a low sagebrush/ bunchgrass type. Moffet Table is a stiff sagebrush scabland. The species in this type include stiff sagebrush, low sagebrush, Sandberg's bluegrass, bluebunch wheatgrass and bottlebrush squirreltail.

The estimated ecological status of the low sagebrush communities is mid-seral and the potential natural community species are probably low sagebrush, bluebunch wheatgrass and Idaho fescue. The stiff sagebrush/low sagebrush scabland is mid-seral, with stiff sagebrush and Sandberg's bluegrass being the probable potential natural community species.

The slopes are a big sagebrush/bunchgrass community type. There are junipers scattered throughout much of this community. There are also patches of mountain mahogany on some areas. This area includes western juniper, big sagebrush, bluebunch wheatgrass, Idaho fescue, Sandberg's bluegrass, prairie junegrass and mountain mahogany. The ecological status of the big sagebrush communities is mid-seral. Probable potential natural community species are big sagebrush, bluebunch wheatgrass, Idaho fescue, Sandberg's bluegrass and prairie junegrass. Western juniper may be present in small amounts in the potential natural community.

Steep hillsides occur along the Malheur River and Bluebucket Creek. The north-facing slopes are a ponderosa pine/wheatgrass community. There is also a small amount of Douglas fir along Bluebucket Creek. There is a total of 200 acres of large conifers. The south-facing slopes are dominated by bunchgrass. The species occurring here are bluebunch wheatgrass, Idaho fescue, Sandberg's bluegrass and some forbs. The ecological status of both communities on the steep hillsides is mid-seral. The potential natural community species in the ponderosa pine community include ponderosa pine, big sagebrush, bitterbrush, mountain mahogany, bluebunch wheatgrass and Sandberg's bluegrass. The potential natural community species in the bunchgrass community are probably bluebunch wheatgrass, Idaho fescue, Sandberg's bluegrass and some forbs.

The riparian areas are closely associated with the Malheur River and Bluebucket Creek. Western juniper, ponderosa pine, Douglas fir, quaking aspen and cottonwood form the overstory. Shrubs include red osier dogwood, wax currant, mountain alder, Wood's rose, Lewis' mock orange, chokecherry and several species of willow. Grasses and forbs include redtop, Kentucky bluegrass, sagewort and many others. The 2.25 miles of riparian habitat along the Middle Fork of the Malheur River is in an early seral stage, while the 1.4 miles of riparian habitat along Bluebucket Creek is 50 percent early seral and 50 percent mid-seral. Riparian habitat is in a relatively early ecological status due to heavy livestock pressure during the growing season.

Wildlife

Wildlife species which occur in the WSA include those normally found in the sagebrush, juniper/ponderosa pine and riparian habitats. Cliffs, talus slopes and rugged canyons provide additional habitat for many species. There is yearlong elk range in the northern third of the WSA, but elk use in this area is sporadic. Antelope use the more open areas of the WSA during the summer and fall. An estimated summer population of 75 deer, 15 antelope and 5 elk and a winter population of 35 elk use the area.

The Middle Fork of the Malheur River and Bluebucket Creek support redband trout (a native fish having a limited range and declining habitat), rainbow trout and mountain whitefish. Redband trout is a candidate species for Federal listing under the Endangered Species Act. Nongame aquatic species include coarse scale suckers, squawfish, chiselmouth, redside shiners and dace. Fish habitat condition is fair, with good gravels, but poor in pool areas.

Gamebirds in the WSA include sage grouse, ruffed grouse, blue grouse, valley quail and mourning dove. These birds are present in limited numbers. Songbirds in the WSA include canyon wren, western meadowlark, Clark's nutcracker, Stellar's jay, yellow-bellied sapsucker, common flicker, sage thrasher and Brewer's sparrow.

One sage grouse strutting ground occurs in the Moffet Table area, in the southeastern part of the WSA. Sage grouse nest within a 2-mile radius of the strutting ground. Sage grouse is a candidate for Federal listing as threatened or endangered.

Other wildlife species found in the WSA include coyotes, bushy-tailed woodrat, canyon mouse, long-eared myotis (bat), Great Basin pocketmouse, black-tailed jackrabbit, mountain cottontail, yellow pine chipmunk, red-tailed hawks, golden eagles, and western rattlesnakes. Beaver are found within the streams.

Watershed

The WSA contains approximately 4 miles of perennial streams, composed of the Middle Fork of the Malheur River and Bluebucket Creek. Both streams have areas of minor bank erosion and the water quality in both streams is estimated to be fair.

Livestock Grazing

The WSA contains portions of three grazing allotments: River FFR, Sunshine Field and Moffet Table. Table 4 summarizes the current estimated livestock use (in AUMs) and the seasons of use for the portion of all three allotments located within the WSA.

Existing livestock developments include six reservoirs, three spring developments and 1.75 miles of fencing. The grazing operators presently use motor vehicles for access within and around the WSA. The roads and ways are used for monitoring livestock, hauling horses and salting. Horses are used for gathering and managing livestock.

Wood Products Harvest

Malheur River/Bluebucket Creek WSA contains 184 acres of commercial forest. Of this total, 142 acres are not available for harvest because the sites are too fragile, rocky, or otherwise not harvestable. Of the remaining 42 acres, 20 acres are located within an area for which BLM's land use plan precludes timber harvesting. The other 22 acres, situated in Section 35, T. 18 S.,R. 34 E., do contain harvestable timber and contribute an estimated 1,500 board feet (1.5 Mbf) per year to BLM's annual programmed timber harvest in the Burns District. The 22 acres of available commercial forest have been harvested in the past. A partial overstory harvest, involving the removal of an estimated 50 percent of the then-mature to over-mature trees, was conducted in 1956. It is not known if that harvest also included any precommercial thinning of the understory.

Recreation Use

Currently 2,000 acres of the WSA are closed to ORV use under a land use plan. Recreation use in the Malheur River/Bluebucket Creek WSA is primarily oriented toward hunting and fishing. Mule deer, elk, antelope and upland game birds are the most commonly-hunted game species, but use for all hunting is low. Most hunting in the area involves use of motor vehicles. Anglers approach the study area by vehicle, then must hike to reach the Malheur River and Bluebucket Creek. There is good access to the WSA along the southeast boundary road and the dead-end road leading into the northern portion of the WSA. Overall recreation use amounts to less than 100 visitor days per year.

Local Personal Income

Livestock use at the current level of 650 AUMs, timber harvest of an average annual volume of 1.5 Mbf and recreation use totaling 100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use-levels amounts to approximately $7,800 for livestock grazing, $405 for timber production and $1,200 related to recreation use of the WSA, for an overall total of $9,405. The Statewide EIS volume discusses the term local personal income and how income figures have been derived.

4. Environmental Consequences

Introduction

This section discusses the environmental consequences of implementing each of the alternatives. Resources and activities not significantly affected by any of the alternatives are not discussed. The Statewide volume discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness: 5,560 acres
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

All of the WSA would be designated wilderness, and wilderness values within the entire 5,560 acres would be protected by legislative mandate. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. Special features, including redband trout habitat, sage grouse and their strutting ground with accompanying nesting sites.

Naturalness

The naturalness of the area's rock-rimmed plateaus and tree-lined drainages would be slightly enhanced by the closure of 4 miles of ways. The ways would naturally revegetate and return to an unbroken grass and sagebrush landscape. Construction of the projected 2-mile riparian fence would directly impair 2 acres and visually influence naturalness on approximately 200 acres along the riparian areas of the WSA.

Maintenance of three developed springs and six reservoirs would require heavy equipment access on the 4 miles of closed ways, and the 2.5 miles of dead-end roads approximately once every 10 years for each development. This infrequent amount of use would not prevent the ways from revegetating.

Solitude

Opportunities for solitude provided by the steep, enclosed river and creek drainages, and the varied vegetative screening, would improve slightly with the closure of 4 miles of ways and reduced use of vehicles in the area.

Maintenance of the existing six reservoirs and three developed springs would require the use of heavy equipment approximately once every 10 years for each facility. This maintenance activity would cause minor local impairment of solitude as would the construction activities of the 2 miles of riparian fence along the Middle Fork of the Malheur River and Bluebucket Creek.

Primitive and Unconfined Recreation

Closure of 4 miles of ways to motorized vehicle use would increase the core area available to visitors to participate in primitive and unconfined recreation opportunities such as day hiking, camping, backpacking, fishing, hunting, sightseeing and photography within the study area. The quality of hunting would be enhanced by the closure and natural revegetation of the ways. The construction of the 2-mile riparian fencing project would allow for the reestablishment of riparian vegetation which would improve the quality of primitive recreation activities within the riparian areas by providing a more natural, primitive and wild setting.

Special Features

Eliminating motorized vehicle use on the 4 miles of ways would reduce potential impacts to the area's sage grouse strutting ground. These impacts include the minor seasonal disturbance of wildlife that inhabit the study area. Construction of the 2-mile riparian fence would result in reestablishment of the riparian vegetation, increased wildlife/fisheries habitat and improved scenic quality.

Conclusion: Wilderness designation of the entire 5,560 acres within the Malheur/Bluebucket Creek WSA would result in the protection and enhancement of the existing wilderness values.

Impacts on Energy and Mineral Development

Wilderness designation would close 5,560 acres within the WSA to mineral entry.

Energy Development

Energy exploration would be precluded on 5,560 acres within the WSA. However, no energy exploration or development is projected in the area due to the lack of known deposits of these resources. The thick cover of tertiary basalts which overlay the possible host rocks precludes reasonable development of these resources.

Conclusion: No impact to energy development is expected.

Mineral Development

Diatomite has a moderate potential for occurrence in portions of the WSA; however, there are insufficient data and evidence to give confidence to this rating. There are no known deposits of sufficiently large ore bodies that would merit development. There is a producing diatomite mine in the region, leading to the projection that exploration or development of the suspected diatomite deposits within the WSA would not occur.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Wilderness designation would not introduce any significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the vegetative section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid-seral stage overall.

The 4 miles of existing ways (totaling 4 acres), once closed to vehicle use, would naturally revegetate with annual forbs and grasses within approximately two growing seasons. Sagebrush would become established in these ways within five years.

Construction of the 2-mile riparian fencing project would allow riparian vegetation to become reestablished through natural increases.

Conclusion: The 4 miles of ways totaling 4 acres would eventually revegetate. Riparian vegetation within the riparian fencing project would improve. The overall vegetation, which is in the mid-seral stage, of the WSA would remain unchanged.

Impacts on Wildlife

Wildlife habitat for a summer population of 75 deer, 15 antelope and 5 elk and a winter population of 35 elk would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives.

The stream habitat improvement project would not be constructed under this alternative and associated benefits (e.g. an increase in redband trout population) would be foregone. This project would not be allowed because it is not necessary for the continued existence or welfare of wildlife.

The construction of 2 miles of fence to control livestock use would increase the density and vigor of riparian vegetation along 3.6 miles of the Middle Fork of the Malheur River and Bluebucket Creek. The change in vegetation would reduce bank erosion. Increased shrub cover would increase thermal and nesting cover and allow for reduced water temperatures during the summer months, thus improving water quality. Redband trout habitat would improve due to increased riparian cover, lower water temperatures and increased insect productivity from riparian shrubs. Other game and nongame species would also benefit from improved riparian habitat.

The retention of large conifers on 200 acres would enhance habitat for species using large conifers and snags such as the pileated woodpecker and Lewis woodpecker.

Conclusion: Wildlife habitat and populations would be maintained on 5,560 acres designated wilderness. The construction of 2 miles of fence would improve riparian habitat and enhance redband trout habitat.

Impacts on Wood Products Harvest

The all wilderness alternative would preclude harvest of timber within the entire study area. As a result, 22 acres of commercial timberland would be removed from the annual programmed timber harvest. An estimated 1.5 Mbf per year of timber harvest would be foregone. The remaining 162 acres of forested areas would not be harvested because of rocky or inaccessible conditions (142 acres) or because the current land use plans already preclude harvest (20 acres).

Conclusion: Twenty-two acres of harvestable timber which would produce 1.5 Mbf/year would not be harvested.

Impacts on Watershed

There would be no expected change in watershed conditions, other than some bank stabilization resulting from the natural riparian reestablishment within the projected riparian fencing project area. Overall water quality would improve slightly.

Conclusion: Some bank stabilization would occur over time in the riparian fencing project area. Water quality of perennial waterways would improve slightly. Watershed would remain unchanged over the remainder of the WSA.

Impacts on Livestock Grazing

Livestock grazing use would remain at the current estimated use-level of approximately 650 AUMs within the portion of the three grazing allotments located in the WSA.

Vehicle use for livestock management and facility inspection and maintenance would be precluded on 4 miles of ways. Annual inspection and maintenance of 1.75 miles of existing fence, not accessible to open roads, would be done on foot or by the use of riding and pack animals. This would result in some slight inconvenience and additional expense to the livestock operators. Maintenance of the six existing reservoirs and three developed springs would require the use of heavy equipment approximately once every 10 years.

Conclusion: Livestock use would remain at the current estimated use level of approximately 650 AUMs. Vehicle use on 4 miles of ways would be precluded, resulting in a slight inconvenience and some additional expense to operators.

Impacts on Recreation Use

The entire 5,560 acres of the WSA would be closed to motorized recreation use, including 4 miles of ways. This closure would reduce vehicle-oriented recreation in the WSA, mostly affecting big game hunting. Vehicle use on 2.5 miles of two dead-end roads would continue.

The quality of, and opportunities for, primitive recreation activities would be maintained at their present level or improved. Although existing use of the area for primitive recreation is low, it is expected that such use would increase slightly, due to the many attractions of the WSA. Vehicle-oriented recreation is not expected to decline substantially, due to the roads remaining open. Some present vehicle-oriented recreationists, primarily hunters, may continue to use the WSA, traveling by foot or horseback. Projected use patterns indicate that the current level of 100 visitor days per year would not substantially change over time.

Conclusion: Wilderness designation would not substantially affect the overall recreation use of the WSA and is expected to remain at the current recreation use-level of 100 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 650 AUMs, while average annual timber production would be precluded. Overall recreation use would remain at 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $405 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $400.

No Wilderness/No Action (Proposed Action)

Recommended suitable for wilderness: 0 acres
Recommended nonsuitable for wilderness: 5,560 acres

Impacts on Wilderness Values

Under the no wilderness alternative, the entire 5,560 acres would not be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation and the area's special features, including redband trout habitat, sage grouse and their strutting ground with accompanying nesting sites would be subject to the effects of projected management actions. These actions include a stream habitat-enhancement project which would benefit redband trout habitat, 2 miles of riparian fencing to reduce livestock pressure in riparian areas, as well as 22 acres of timber harvest.

Naturalness

All projected management actions, including the 2 miles of riparian fencing, the stream habitat-improvement project, as well as the 22-acre timber harvest would be allowed under the no wilderness alternative. The timber harvest would directly disturb 22 acres and visually influence approximately 550 acres.

Continued vehicle use on the existing 2.5 miles of dead-end roads and 4 miles of ways would continue the impacts of vehicle tracks upon naturalness by influencing approximately 1,000 acres.

Construction of the projected 2-mile riparian fence would directly impair 2 acres and visually influence naturalness on 200 acres along the riparian areas of the WSA. The stream habitat improvement project would have little impact on the area's naturalness due to the use of helicopters for placement of the approximately 250 boulders for pool creation. The naturalness of Malheur River and Bluebucket Creek would be enhanced with the creation of the river pools and increases in fish populations.

Solitude

Continued use of vehicles on the existing 2.5 miles of dead-end roads and
4 miles of ways, as well as the other projected management actions, would cause repeated, but short-term local impairment of solitude opportunities adjacent to these activities.

The solitude opportunities in the drainages would be improved by the eventual reestablishment of riparian vegetation within the riparian fencing project area. Solitude opportunities in the rest of the WSA would remain unchanged.

Primitive and Unconfined Recreation

Under this alternative, the quality of some primitive recreation experiences would be reduced by the projected logging of 22 acres of timber and the continued use of vehicles on the 2.5 miles of dead-end roads and the 4 miles of ways. The quality of primitive recreation activities would be enhanced by increased fish populations and riparian vegetation as a result of the stream habitat improvement and riparian fencing projects.

Special Features

The redband trout and their habitat, the sage grouse strutting ground and accompanying nesting sites would be subject to disturbance and impacts from development of other resources. Monitoring and mitigation measures could minimize or eliminate some of these impacts. The riparian fencing project and the stream rehabilitation work would enhance redband trout habitat. The 22-acre timber harvest, riparian fencing project and stream rehabilitation work would not affect sage grouse and their habitat, while it would enhance habitat for some game (deer and elk) and nongame species.

Conclusion: In the absence of wilderness designation, projected management actions would directly and indirectly impair wilderness values over approximately 775 acres of the WSA. The riparian fence and stream habitat improvement projects would enhance wilderness values through increased riparian vegetation and native fish populations (redband trout).

Impacts on Energy and Mineral Development

The entire area would be open to mineral entry.

Energy Development

Energy exploration and development would be allowed on 5,560 acres within the WSA. No energy exploration or development is projected in the area due to the lack of known deposits of these resources. The thick cover of tertiary basalts which overlay the possible host rocks precludes reasonable development of these resources.

Conclusion: No impact to energy development is expected.

Mineral Development

Diatomite has a moderate potential for occurrence in portions of the WSA; however, there is insufficient data and evidence to give confidence to this rating. There are no known deposits of sufficiently large ore bodies that would merit development. There is a producing diatomite mine in the region, leading to the projection that exploration or development of the suspected diatomite deposits within the WSA would not occur.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

The 4 miles of ways would remain open to use by vehicles and would not naturally revegetate.

Construction of the 2-mile riparian fencing project would allow riparian vegetation to become reestablished through natural processes.

Timber harvest would periodically partially remove the ponderosa pine overstory and selected Douglas fir trees on 22 acres. The mid-seral community of ponderosa pine and Douglas fir (a potential natural community species) would change to early seral, and the ecological succession toward a late seral community would be interrupted.

Conclusion: Timber harvesting methods currently in practice would change the 22 acres of available commercial forest to an early seral community with a ponderosa pine and Douglas fir mixture.

Impacts on Wildlife Habitat

Under this alternative, installation of fish habitat improvements could increase the redband trout population by 1,250 individuals. An estimated 50 percent of the mature to over-mature timber on the 22 acres was harvested in 1956. The current stand remains in an uneven-aged condition with some overstory, however, future logging would change this stand structure. Forage for deer and elk would be increased but the habitat for those species utilizing remaining large trees and snags, such as pileated woodpeckers and Lewis woodpeckers, would be degraded.

The construction of 2 miles of fence to control livestock use would increase the density and vigor of riparian vegetation along 3.6 miles of the Middle Fork of the Malheur River and Bluebucket Creek and reduce bank erosion. Increased shrub cover would increase thermal and nesting cover and allow reduced water temperatures during the summer months, thus improving water quality. Redband trout habitat would improve due to increased riparian cover, lower water temperatures and increased insect productivity from riparian shrubs. Other game and nongame species would also benefit from improved riparian habitat.

Wildlife habitat for a summer population of 75 deer, 15 antelope and 5 elk and a winter population of 35 elk would be maintained. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives.

Conclusion: Wildlife habitat would be maintained over most of the area. Logging 22 acres would increase disturbance to some wildlife species due to the eventual conversion of the 22 acres to an early seral stage. Construction of 2 miles of riparian fencing would allow for the improvement of 3.6 miles of riparian habitat. The stream habitat improvement project would allow for improved redband trout habitat along 2.25 miles of the Middle Fork of the Malheur River.

Impacts on Wood Products Harvest

Under the no wilderness/no action alternative, 22 acres of forested land is projected to be harvested. This would contribute an average of 1.5 Mbf per year of timber to BLM's programmed harvest in the Burns District.

Conclusion: Twenty-two acres of forested land could be harvested and would contribute 1.5 Mbf of timber per year.

Impacts on Watershed

Some localized bank stabilization is expected to occur due to natural riparian vegetation reestablishment within the area protected by the 2-mile riparian fencing project. Buffer strips along the perennial drainages would alleviate any disturbance by logging operations. The watershed over the rest of the WSA would remain unchanged.

Conclusion: Most of the watershed in the WSA would remain unchanged. Some bank stabilization would occur from the reestablishment of riparian vegetation in the riparian fencing project.

Impacts on Livestock Grazing

Livestock grazing use would remain at the current estimated use level of approximately 650 AUMs within the portion of the three grazing allotments located in the WSA.

Vehicle use for livestock management and facility inspection and maintenance would continue on the 4 miles of ways and 2.5 miles of dead-end roads.

Conclusion: Livestock use would remain at the current estimated use level of approximately 640 AUMs. Vehicle use on 4 miles of ways and 2.5 miles of dead-end roads would continue for livestock management and facility maintenance.

Impacts on Recreation Use

Motorized vehicle use would continue within the WSA, on the existing 2.5 miles of dead-end roads and 4 miles of ways. Approximately 2,000 acres of the WSA would continue to be managed under the current off-highway vehicle designation, leaving 3,560 acres subject to possible off-highway vehicle disturbance.

Primitive recreation activities would decline in the areas influenced by motorized vehicles, as well as disturbance from the projected timber harvest. Overall recreation use could increase slightly, resulting from the projected increases in fish populations due to the projected stream habitat improvement project. Projected use patterns indicate that the current level of 100 visitor days per year would not substantially change over time.

Conclusion: The area's current recreation use level of 100 visitor days per year would not be substantially affected under this alternative.

Impacts on Local Personal Income

Livestock grazing would remain at 650 AUMs, while average annual timber production would remain at 1.5 Mbf. Overall recreation use would remain at 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be no net change from the current level.

Conclusion: Annual local personal income generated from resource outputs in the WSA would remain at approximately $9,000.

Unavoidable Adverse Impacts of the Proposed Action

Under the Proposed Action (No Wilderness/No Action), construction of the 2-mile riparian fencing project would impact wilderness values by directly disturbing 2 acres and visually influencing an additional 200 acres. The projected timber harvest would directly disturb 22 acres and visually influence approximately 550 acres.

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity

Under the Proposed Action, existing short-term uses would continue. Future land use options, including a 22-acre timber harvest and wildlife habitat improvement projects would remain open. The long-term ability of the area to produce wilderness values would be directly lost on 24 acres due to surface disturbance related to the timber harvest and riparian fencing project. These projects would visually influence approximately 750 acres.

Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, there would be an irreversible and irretrievable commitment of wilderness values on 24 acres. The timber harvest would commit existing timber resources on 22 acres. The riparian fence construction and instream structures would reduce wilderness values on 2 acres. These projects would visually influence approximately 750 acres.

5. Wilderness Manageability and Rationale for the Proposed Action

Manageability of the Area as Wilderness

The Malheur River/Bluebucket Creek WSA could be managed as wilderness under wilderness designation; however, significant manageability problems could be expected.

The shape of this WSA is irregular with narrow finger-like protrusions into surrounding private lands. This is especially the case in the southern half of the WSA. The WSA is no more than .75 mile wide in these southern segments. Much of the area is bounded by private lands. Although nearly half of the boundary can be identified by fences, the rest has no identifying features whatsoever. Visitors to the area may wander onto private land if the boundary is not marked, but the problem could be lessened by posting signs along the boundary lines. The greatest need for signs would be where the major drainages cross the northern, eastern and southern boundary. These areas would receive the most recreation use.

The development of the adjacent private lands could also be a manageability problem. Although no development is planned at this time, development of adjacent lands to the south of the WSA would be visible from various points in the study area and could have an adverse effect on the perception of the naturalness of the area.

The roads that enter the WSA could cause manageability problems if vehicle use increased. Presently these roads are used by ranchers and for hunting and fishing access, and the situation is not expected to substantially change in the near future.

Rationale for the Selection of the Proposed Action

The proposal of no wilderness is a change from the Proposed Action of all wilderness in the draft EIS. This change is due to a reassessment of the areas' characteristics and BLM's conclusion that the manageability problems associated with its narrow and irregular configuration, the influence from surrounding private lands and from existing improvements, and human-caused changes are more significant than previously identified.

In addition, the no wilderness alternative is proposed because the potential value of the area for wildlife habitat improvement and fishery enhancement offset the benefits of this area for wilderness, which would not allow such projects.

Twenty-two acres of commercial timberland would also remain in the District's allowable cut base and be available for harvest under the no wilderness alternative.

6. Summary and Analysis of Public Comments

Following is a summary of public comments specific to the WSA concerning adequacy of the analysis in this appendix, and responses to those comments. These comments were received both in writing and oral testimony at public hearings during the comment periods for the 1985 Draft EIS and the 1987 Supplement to the Draft EIS. Comments concerning the BLM's wilderness recommendations or rationale were considered in developing the Proposed Action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning statewide issues and analysis are addressed in the Statewide volume.

Comment: Discuss impact of logging on elk. **Response:** The 22-acre timber harvest would result in increased forage for deer and elk. For further information, see the discussion under Section 4, No Wilderness, Impacts on Wildlife.

Comment: Road from the north is not a dead-end road. It goes through the WSA to private land on the south. **Response:** The definition of a road, as an access route maintained by mechanical means, indicates that the road "dead-ends" as shown on the map for this appendix. The steepness of the drainage prevents any mechanical means of maintaining the vehicle tracks that continue beyond the end of the dead-end road.

Comment: California Pacific Utilities has an existing line along Calamity Creek to the existing power corridor between Griffin and Malheur. **Response:** After researching the area, no record was found of any power corridor within or adjacent to this WSA.

Comment: Discuss an alternative that explores exchanges or agreements with adjacent landowners.
Response: These lands lie outside the WSA and are not considered for acquisition in this analysis.

Table 1. Summary of Proposed Management Under Each Alternative, Malheur River/Bluebucket Creek WSA (OR-2-14)

Proposed Management	All Wilderness	No Wilderness/ No Action
Acres Designated as Wilderness	5,560	0
Acres Closed to ORVs by Wilderness Designation [1]	3,560	0
Miles of Ways Closed	4	0
Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation	5,560	0
Structural Wildlife Projects Developed:		
Stream Channel Projects (number) [2]	0	1 (2.5 miles)
Riparian Fencing Projects (miles)	2	2
Acres of Timber Available for Harvest	0	22
Average Annual Volume of Timber Sold (Mbf-Thousand Board Feet)	0	1.5

[1] Approximately 2,000 acres are already closed to ORVs under the current land use plan and would remain closed after designation.

[2] The project involves placement of 25 stream structures and 250 boulders.

Table 2. Summary of Environmental Consequences of Alternatives, Malheur River/Bluebucket Creek WSA (OR-2-14)

Resource or Activity	All Wilderness	No Wilderness/No Action (Proposed Action)
Wilderness Values	Wilderness designation of the entire 5,560 acres within the Malheur/Bluebucket Creek WSA would result in the protection and enhancement of the existing wilderness values.	In the absence of wilderness designation, projected management actions would directly and indirectly impair wilderness values over approximately 775 acres of the WSA. The riparian fence and stream habitat improvement projects would enhance wilderness values through increased riparian vegetation and native fish populations (redband trout).
Energy and Mineral Development	No impact to energy or mineral development is expected.	No impact to energy or mineral development.
Vegetation	The 4 miles of ways would eventually revegetate. Riparian vegetation within the riparian fencing project would improve. The overall vegetation, which is in the mid-seral stage, of the WSA would remain unchanged.	Timber harvesting methods currently in practice would change the 22 acres of available commercial forest to an early seral community with a ponderosa pine and Douglas fir mixture.
Wildlife	Wildlife habitat and populations would be maintained on 5,560 acres designated wilderness. The construction of 2 miles of fence would improve riparian habitat and enhance redband trout habitat.	Wildlife habitat would be maintained over most of the area. Logging 22 acres would increase disturbance to some wildlife species due to the eventual conversion of the 22 acres to an early seral stage. Construction of 2 miles of riparian fencing would allow for the improvement of 3.6 miles of riparian habitat. The stream habitat improvement project would allow for improved redband trout habitat along 2.25 miles of the Middle Fork of the Malheur River.
Wood Products Harvest	Twenty-two acres of harvestable timber which would produce 1.5 Mbf/year would not be harvested.	Twenty-two acres of forested land could be harvested and would contribute 1.5 Mbf of timber per year.
Watershed	Some bank stabilization would occur over time in the riparian fencing project area. Water quality of perennial waterways would improve slightly. Watershed would remain unchanged over the remainder of the WSA.	Most of the watershed in the WSA would remain unchanged. Some bank stabilization would occur from the reestablishment of riparian vegetation in the riparian fencing project.
Livestock Grazing	Livestock use would remain at the current estimated level of 650 AUMs. Vehicle use on 4 miles of ways would be precluded, resulting in a slight inconvenience and some additional expense to livestock operators.	Livestock use would remain at the current estimated level of 650 AUMs. Vehicle use on 4 miles of ways and 2.5 miles of dead-end roads would contine for livestock management and facility maintenance.
Recreation Use	Wilderness designation would not substantially affect the overall recreation use of the WSA, which is expected to remain at the current recreation use level of 100 visitor days per year.	The area's current recreation use level of l00 visitor days per year would not be substantially affected.
Local Personal Income	Annual local personal income would decrease by approximately $400.	Annual local personal income would remain at approximately $9,000.

Table 3. Classification of Energy and Mineral Potential, Malheur River/Bluebucket Creek WSA (OR-2-14)

Commodity	Area	Level of Potential	Level of Certainty
Metals	Entire WSA	O	A
Geothermal	Entire WSA	O	B
Uranium/Thorium	Entire WSA	O	A
Coal	Entire WSA	L	B
Oil/Gas	Entire WSA	M	B
Tar Sands/Oil Shale	Entire WSA	O	C
Limestone	Entire WSA	O	C
Bentonite	Entire WSA	L	A
Diatomite	Entire WSA	M	A
Zeolites	Entire WSA	L	C

Legend:

Level of Potential

O - No indication for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Medium potential for accumulations of energy/mineral resource
H - High potential for accumulations of energy/mineral resource

Level of Certainty

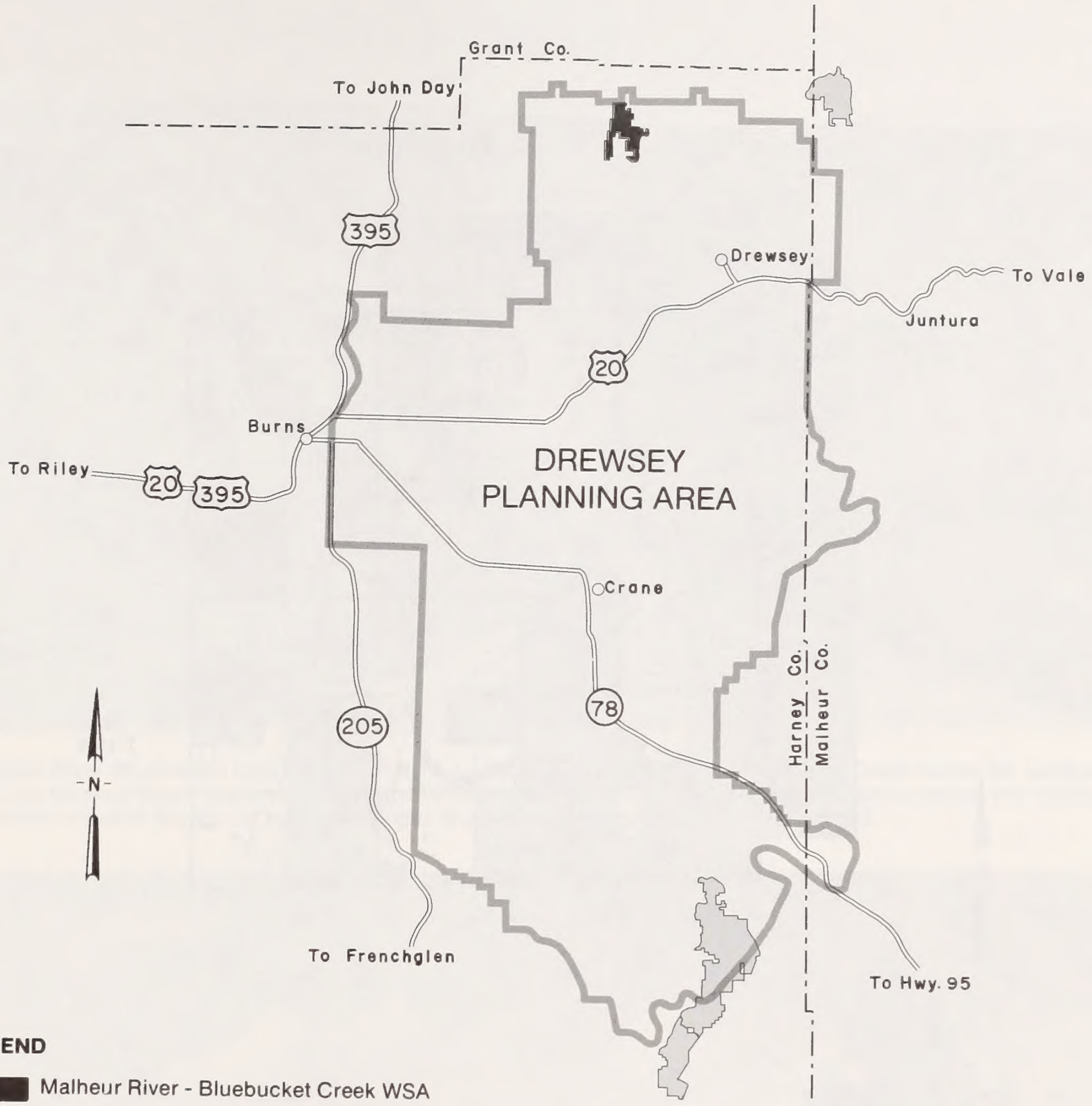
A - Insufficient data or no direct evidence
B - Indirect evidence available
C - Direct evidence but quantitatively minimal
D - Abundant direct and indirect evidence

Table 4. Existing Livestock Use, Malheur River/Bluebucket Creek WSA (OR-2-14)

Grazing Allotment	Licensed AUMs in Allot.	Period of Use	Percent of Allot. in WSA	Current Estimated Use in WSA (AUMs)
River FFR (No. 5570)	60	09/01-10/31	60	36
Sunshine Fld. (No. 5545)	53	06/01-09/30	19	10
Moffet Tab1e (No. 5511)	1,831	04/15-09/30	33	604
Unalloted	0	None	100	0
Totals	1,944			650

Table 5. Effects of Alternatives on Local Personal Income, Malheur River/Bluebucket Creek WSA (OR-2-14) (1981 price levels)

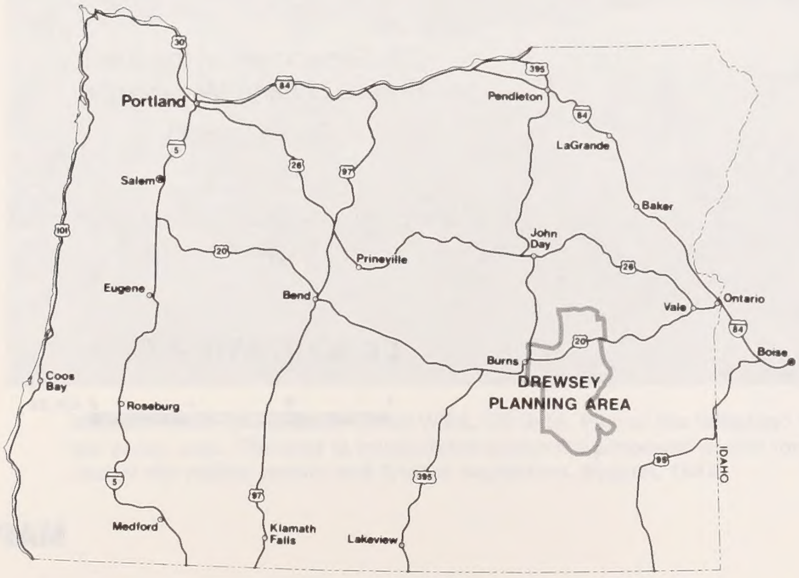
Item	Unit of Measure	All Wilderness	No Wilderness/ No Action
CHANGES IN RESOURCE OUTPUTS			
Livestock Grazing	AUMs	No change	No change
Timber Production	Mbf	-1.5	No change
Recreation Use	RVD	No change	No change
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES			
Livestock Grazing	$	0	0
Timber Production	$	-405	
Recreation Use	$	0	0
Total	$	-405	0



LEGEND

■ Malheur River - Bluebucket Creek WSA

□ Other WSA's



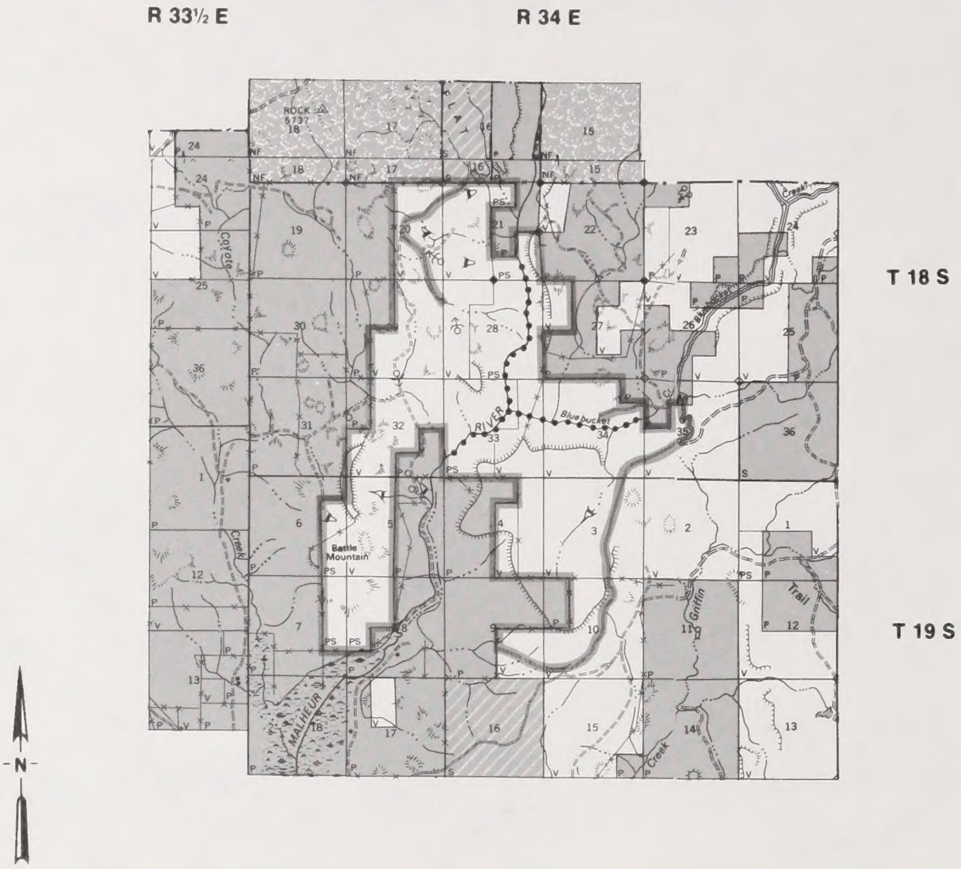
U. S. Department of the Interior
Bureau of Land Management
Burns District

Malheur River - Bluebucket Creek WSA
OR-2-14

LOCATION MAP

10 0 10 MILES

MAP 1



LEGEND

▭ BLM Land in WSA Studied Under Section 603 of FLPMA

— Wilderness Study Area Boundary

□ Bureau of Land Management

▨ State

▩ Private

░ U.S. Forest Service

• • • • **Redband Trout Habitat**

U. S. Department of the Interior
Bureau of Land Management
Burns District

Malheur River - Bluebucket Creek WSA
OR-2-14

LAND OWNERSHIP

1 0 1 2 MILES

MAP 2

Malheur River-Bluebucket Creek WSA, OR-2-14. Looking upstream (east) at Bluebucket Creek above the confluence with the Malheur River. The area is nonsuitable under the proposed action (no wilderness/no action). The relatively flat tableland which is deeply cut by the drainages is prominent on right and left. August 1983.

Malheur River-Bluebucket Creek WSA, OR-2-14. Part of the tableland in the northeast portion of the northwest portion of the study area. The area is nonsuitable under the proposed action (no wilderness/no action). The view to the northwest shows the rolling terrain and typical vegetation. August, 1983.

Appendix to the Wilderness Environmental Impact Statement of Oregon

Stonehouse Wilderness Study Area (OR-2-23L)

1. Introduction

General Description of the Study Area

The Stonehouse Wilderness Study Area (WSA) is located about 50 miles southeast of Burns in Harney County (see Map 1). The area is adjacent to the county road which runs between State Highway 78 (at Folly Farm) and Fields. The State Highway is 8 miles northeast of the WSA.

The study area contains 21,325 acres of public land in an elongated, roughly crescent shape (see Map 2). The WSA is 13 miles long, about 2 miles wide at the points of the crescent and 5.5 miles wide at the middle. The boundary is irregular; a small head-shaped peninsula protrudes from the northern end. The study area contains three parcels of private land totaling 920 acres located in the northern half of the WSA. The WSA contains one 320-acre and one 5-acre parcel of split-estate land.

On all sides of the study area, the boundary is formed by a combination of private land and low standard dirt roads. In addition, a dead-end road which enters the WSA for 1.5 miles and a 160-acre parcel of private land form part of the northwestern boundary.

Topography in the Stonehouse WSA varies from very steep rock walls to wide, flat basins. The WSA is located on the northern end of the Steens Mountain fault block. The area has a high, steep, east-facing escarpment, and gentle, open, west slopes. The highest elevation in the WSA is 7,200 feet at Stonehouse Peak. The lowest point is 4,100 feet at the base of the escarpment near the eastern boundary.

Steens Rim, with a 2,000-foot rise, dominates the study area, running northeast along the eastern side of the WSA. The rim is cut by many shallow but steep east-flowing drainages. Squaw Creek, near the center of the WSA is the largest of the two perennial streams in the area. Stonehouse Creek, the other perennial stream, runs along the southern boundary. The other streams are spring-fed and intermittent.

The northwestern and central portions of the WSA contain gently-rolling hills and depressions, all sloping west. There are three shallow, intermittent lakes in the center of the area, partially surrounded and separated by rocky escarpments rising as high as 400 feet. The largest of these lakes is Squaw Lake.

The northern quarter of the area is noticeably different from the rest. This part contains Oriana Flats (a wide, open valley) as well as numerous other flat areas and rolling hills.

Vegetation in the study area includes scattered dense juniper stands on the east-facing slopes and sides of the drainages. Some mountain mahogany is mixed with the juniper in the higher elevations and a few stands of aspen grow in the wetter locations near springs and drainages. Big and low sagebrush, as well as a variety of grasses, are found throughout the area.

Interrelationships

Adjacent to the southern boundary of the study area is the Lower Stonehouse Wilderness Study Area (OR-2-23M). It is separated from the Stonehouse WSA by a BLM/private dirt road and a small amount of private land. The road is maintained on an as-needed basis and provides access to the northern portion of Steens Mountain for grazing permittees, private landowners, recreationists and BLM personnel.

The WSA is located within the Oregon Department of Fish and Wildlife's (ODFW) Steens Mountain Wildlife Management Unit which contains 1,916 square miles of land. The WSA supports a summer population of an estimated 800 deer, 75 antelope and 10 elk, and a winter population of 150 deer and 10 antelope. ODFW has not set management objectives for antelope, but has an objective to maintain a herd of 11,000 deer in the Steens Mountain Wildlife Management Unit.

ODFW also conducts aerial monitoring of wintering mule deer and summering antelope within the WSA.

The goal for nongame wildlife is to maintain populations of naturally-occurring species at self-sustaining levels. The proposed action for this WSA would be inconsistent with ODFW's management objectives for deer and some nongame species because proposed sagebrush control would adversely affect the habitat.

U.S. Department of Agriculture (USDA) conducts a predator-control program along the foothills of Steens Mountain by aerially shooting coyotes to reduce predation of livestock.

Most of the WSA is in the Riddle Mountain Wild Horse Herd Management Area (HMA), and a small area on the eastern edge is in the Heath Creek-Sheepshead HMA. Management of the HMA would not be significantly affected by any of the alternatives.

Harney County has not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study and EIS planning, scoping and public review process. These issues concern both the effects of wilderness designation on existing and potential land uses or resources in the WSA, as well as the effects of existing and potential land uses or resources on wilderness values. Land uses or resources raised as issues specifically for this WSA include:

- impact on the area's wilderness values,
- impact on energy and mineral development,
- impact on mule deer, sage grouse, and nongame wildlife populations,
- impact on livestock grazing use levels and management,
- impact on recreation use levels; and
- impact on economic value of existing and projected resource outputs and local personal income derived from them.

No other issues specific to this WSA were raised by BLM or the public.

2. Description of the Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made.

The following alternatives are analyzed:

- all wilderness
- partial
- no wilderness/no action (proposed action)

An alternative recommending closure of the southern boundary road and combining the Stonehouse WSA with the Lower Stonehouse WSA to the south is not analyzed because of the significance of the boundary road. The Stonehouse road provides primary access to the upper elevations of the northern portion of Steens Mountain from the eastern side of the mountain. The road is heavily used by hunters in the fall, ranchers and BLM personnel. Also, an enhanced alternative which would recommend closure of the 1.5 mile of the dead-end road (see Map 2) and the acquisition of the private inholdings is not analyzed because it would not be substantially different from the partial alternative.

All Wilderness

The all wilderness alternative would recommend all 21,325 acres of public land in the Stonehouse WSA suitable as wilderness (see Map 2). For purposes of analysis, it is assumed the private lands and mineral estate of split-estate lands would not be acquired. The dead-end road which enters the area would remain open to vehicles.

Energy and Mineral Development Actions

Wilderness designation would close 21,000 acres of public land within the WSA to all forms of mineral appropriation under the mining and mineral leasing laws. A total of 920 acres of private land in three parcels, as well as 325 acres of split-estate lands, would be open to mineral exploration and development. Direct and indirect evidence indicates a moderate potential for the occurrence of diatomite. However, since there are no known deposits of this commodity, it is postulated that only casual exploration, without development, for mineral resources would occur on the private and split-estate lands under this alternative.

Due to a lack of geologic evidence, no known petroleum or geothermal bearing formations, a subsurface not conducive to the formation of hydrocarbons, a thick volcanic covering on the surface and the absence of any existing mineral leases, only casual exploration for oil and gas and geothermal resources is projected on the 1,245 acres of private and split-estate lands.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and to be consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

Livestock Management Actions

Livestock use would remain at the current use level of 2,307 AUMs in the WSA. Periods of use range from April 1 to October 31, with the highest use period being July 1 to October 31 in the Burnt Flat allotment (see Table 4).

Vehicle use for livestock management on 10 miles of ways would be precluded. Management of livestock and maintenance of 1 mile of fence would be conducted mainly with horses and pack animals. Mechanized heavy equipment would be used to maintain 12 reservoirs on the average of once every 10 years and two ditches once every 5 years.

Recreation Management Actions

The entire 21,325 acres would be closed to motorized vehicle use including 10 miles of ways. Currently 6,580 acres, including 4 miles of ways, are closed to vehicle use by a BLM off-highway vehicle designation.

Recreation use is estimated to be approximately 200 visitor days per year. Most use is associated with vehicle access utilizing the interior dead-end road and ways.

Partial

The partial alternative would recommend 20,315 acres of public land suitable as wilderness (see Map 3). The 1.5 mile dead-end road which enters the area would be closed. An attempt would be made to acquire 2,575 acres of private land through purchase or exchange with willing landowners. The mineral estate of the 325 acres of split-estate would also be acquired.

Assuming acquisition of the 2,575 acres of private land, the total area recommended suitable under this alternative would be 22,890 acres.

Boundary adjustments recommended under this alternative would affect all sides of the WSA. Part of the southeastern boundary would be the 4,500-foot elevation contour; 1,010 acres of the WSA would be recommended nonsuitable. This would provide for better identification of the boundary in this area and allow for a proposed sagebrush-control project on an old crested wheatgrass seeding.

On the northeast, acquisition of parcels of private land which extend into the WSA would improve the area's configuration. This would provide better identification of the boundary, which would follow an existing road.

On the western boundary in the central portion of the study area, a parcel of private land extending into the WSA would also be acquired. In this area, the boundary would follow the top of a ridgeline and provide better identification of the boundary on the ground. A private parcel would also be acquired on the western side of the WSA at the end of the dead-end road which would be closed.

The southern boundary would follow the Stonehouse road along its entire length. Acquisition of some private land in this area would help provide better identification of the boundary as the boundary now leaves the road and skirts around the small parcel of private property.

Energy and Mineral Development Actions

The partial alternative would close 19,990 acres within the WSA to all forms of mineral appropriation under the mining and mineral leasing laws. If acquisition is successful, 2,575 acres of private land and 325 acres of split-estate lands would be closed to mineral entry for a total of 22,890 acres. Exploration for oil and gas and diatomite would be prohibited.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and to be consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. No wildlife projects are proposed.

Livestock Management Actions

Livestock use would remain at the current level of 2,307 AUMs in the suitable portion of the WSA. The season of use would remain as identified in Table 4. A 1,010-acre brush-control project to enhance livestock grazing would be developed in the nonsuitable portion of the WSA.

Vehicle use for livestock management and maintenance would be precluded on 9 miles of ways and 1.5 miles of dead-end road. Management of livestock and routine maintenance of 1 mile of fence would be conducted mainly with horses and pack animals. Mechanized heavy equipment would be used to maintain 12 reservoirs on the average of once every 10 years and two ditches once every 5 years.

Recreation Management Actions

Motorized use would be precluded on 14,825 acres recommended suitable including 13 miles of ways and 1.5 miles of dead-end road. Currently, 6,500 acres are closed to vehicle use by a BLM off-highway vehicle designation. In the rest of the WSA, the restrictive nature of the terrain discourages such use. Vehicle-oriented recreation activities could occur on 1,010 acres recommended nonsuitable.

Recreation use is estimated to be approximately 200 visitor days per year. Most use is associated with vehicle access utilizing the interior dead-end road and ways.

No Wilderness/No Action (Proposed Action)

The no wilderness/no action alternative would recommend the entire WSA nonsuitable as wilderness. It represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

The entire 21,325-acre WSA would be open to mineral entry and energy exploration and development. Due to a lack of geologic evidence, no known petroleum or geothermal-bearing formations, a subsurface not conducive to the formation of hydrocarbons, a thick volcanic covering on the surface and the absence of any existing mineral leases, only casual exploration for oil and gas and geothermal resources is projected. Direct and indirect evidence indicates a moderate potential for the occurrence of diatomite. However, since there are no known deposits of this commodity, it is postulated that only casual exploration for mineral resources would occur.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and to be consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. No wildlife projects are proposed.

Livestock Management Actions

Livestock use would increase from the current use level of 2,307 AUMs to 2,512 AUMs. The proposed brush control on 1,010 acres would be allowed in an old crested wheatgrass seeding. Season of use would remain as identified in Table 4.

Vehicle use for livestock management and maintenance activities would continue on the existing 1.5 miles of roads and 10 miles of ways, (4 miles of ways and 6,500 acres are closed under an off-highway vehicle designation) for livestock monitoring, management and maintenance of rangeland developments. Use of heavy mechanized equipment would be required approximately once every 10 years to maintain 12 reservoirs and once every 5 years to maintain two irrigation ditches.

Recreation Management Actions

Vehicle-oriented recreation would continue on 1.5 miles of roads and 10 miles of ways with the exception of the 4 miles of ways and 6,500 acres now closed under an off-highway vehicle designation. Most off highway vehicle (OHV) use would be naturally restricted because of terrain which prohibits intensive vehicle use. Current recreation use is estimated to be 200 annual visitor days.

Summary

Table 1 summarizes the projected management actions under each alternative. Table 2 summarizes the environmental consequences of each alternative.

3. Affected Environment

This section discusses only those activities or resources which influence the character of the study area or that may be affected by the alternatives.

Wilderness Values

Naturalness

Stonehouse WSA is in a relatively natural condition. None of the unnatural features are substantially noticeable.

There are 30 unnatural features which influence approximately 12 percent of the WSA: 12 reservoirs, 13 ways totaling about 14 miles, two ditches totaling about 2 miles, two fences totaling 1 mile and one airplane landing strip.

The airplane landing strip, above Tommies Place in the northwest corner, is one of the larger developments. It is adjacent to the boundary road and is considerably less noticeable than the road. Sagebrush has been bladed off for the landing area, but the strip has not been cut into the hillside and is not substantially noticeable.

The 12 reservoirs are scattered throughout the WSA with a small concentration on the western side. Most of the reservoirs are small and screened by vegetation or topography, so they only slightly influence the area. However, two of the reservoirs are the most noticeable developments within the WSA. The northern-most reservoir in the WSA is noticeable because of the surrounding open, flat country. The reservoir at the south end of Burnt Flat is visible from a large area because of the high ridge and peak to the southeast, and its location in the flat area. In addition to the 12 reservoirs on public lands, there are also four reservoirs on private inholdings.

Two fences cross the western portion of the WSA. Both fences enter from the western boundary and end at the top of the high ridge. One fence is immediately west of Stonehouse Peak. The other one enters the study area from private property and extends southeast to a high point on the ridge. These fences have only a minor visual influence due to topographic and vegetative screening.

The 13 ways (which total 14 miles) are substantially unnoticeable because they are overgrown with sagebrush. Four ways, each less than 1 mile long, end at the east rim of the WSA. Two of the ways go to springs, while six of the ways lead to reservoirs and one to a private inholding.

An off-highway vehicle closure is in effect which closes 6,500 acres of the WSA to motorized vehicle use. This area is located in the central portion of the WSA along the western boundary. The designation closes four ways (totaling approximately 4 miles) which provide access off the western boundary road.

Outside sights and sounds have a very minor effect on the study area. Sources of outside sights and sounds are the boundary roads, four reservoirs, a cabin and, from high points, the county road and ranches to the east. These features do not detract from the wilderness character of the study area.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

The Stonehouse WSA has outstanding opportunities for solitude; however, the configuration of the WSA may constrain movement within the study area, particularly in the northern end of the WSA.

Topographic screening is provided by the Steens Mountain ridgeline which bisects the WSA. The west side of the area is screened from the east side by the ridgetop peaks. Small areas within the center of the study area are screened by broken ridges and rolling hills. Shallow drainages throughout the WSA also enhance the opportunity for solitude.

Vegetative screening also enhances opportunities for solitude. Juniper is scattered throughout the study area and aspen occurs in small groves along ridge slopes in the north, creating places for solitude. The steep, east slopes of the Steens ridge also have dense juniper stands, but the steepness of this area would make it extremely difficult for most visitors to use the area.

The WSA provides outstanding opportunities for primitive forms of recreation. These activities include day hiking, backpacking, camping, hunting and sightseeing. However, the WSA currently receives little primitive recreation use not associated with hunting. There are no estimates of visitor use which are associated with primitive recreation.

The major attraction for day hiking would be the main ridge which overlooks Juniper, Tudor and Fifteen Cent Lakes outside the study area to the east. Short loop hikes are possible by hiking along the main east-face rim and returning by other drainages, or by traversing the various west slopes. The steep, east face would be a very challenging hike.

These features would also be of interest to the backpacker or camper. Stonehouse WSA provides an opportunity for 3- to 4-day trips. Adequate campsites are available and water is found throughout the WSA, but is not abundant.

Game species which can be hunted within the WSA include mule deer, antelope, elk, valley quail and chukars. Waterfowl are found on Squaw Lake during wet years, but are rarely hunted. Opportunities for hunting are excellent throughout the WSA.

The east rim of Steens Mountain provides spectacular views of the surrounding area including the Alvord Basin and Sheepshead Mountains. The rocky cliff faces, the steep east-facing escarpment, and the shallow lakes within the central portion of the area provide outstanding opportunities for sightseeing within the WSA.

Special Features

A special wilderness feature of the Stonehouse WSA is the escarpment's outstanding scenic quality (see Map 5). The escarpment is highly visible and has a variety of landform, color, and vegetation. The escarpment is one of a series of steep fault scarps which form the basin and range topography of much of southeastern Oregon. Other special features are the small intermittent lakes, the crucial deer winter range, and sage grouse which is a candidate for Federal listing as threatened or endangered.

Diversity in the National Wilderness Preservation System (NWPS)

According the Bailey-Kuchler system of classifying ecosystems, the study area is in the Intermountain Sagebrush Province. The potential natural vegetation is sagebrush-steppe, alpine meadows and barren communities.

Nine ecosystems listed in the Basin and Range section of the Oregon Natural Heritage Plan occur in this study area. The tree communities are western juniper/big sagebrush/bluebunch wheatgrass, western juniper/bluebunch wheatgrass, and aspen groves. The sagebrush communities are big sagebrush/bluebunch wheatgrass, big sagebrush/Idaho fescue, low sagebrush/bluebunch wheatgrass, low sagebrush/Idaho fescue, low sagebrush/Sandberg's bluegrass, and silver sage community.

The study area is within five hours' driving time of one standard metropolitan statistical area with population over 100,000: Boise, Idaho.

Energy and Mineral Development

The geology, energy and mineral resources of the Stonehouse WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, correlating rock units in the WSA with similar environments in areas known to contain mineral resources and by evaluating a geochemical sampling program conducted by BLM.

Technical details of the evaluation are in a mineral resources assessment report, "Sheepshead Mountain Geologic Resource Area (GRA), Harney County Oregon," prepared by TERRADATA (a consulting firm under contract with BLM) and in a BLM report on Fields GRAs.

The WSA is within the South Harney GRA which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level). A description of the rating system is provided in the Statewide EIS volume.

Table 3 shows the energy and mineral classifications in the study area. Map 4 shows where energy and mineral resources have moderate or high potential for occurrence in the WSA.

Surface rocks in the WSA are composed mainly of Steens Basalt which consists of numerous thin flows of olivine basalt and rare interlayers of tuffs, with a cumulative thickness of several thousand feet. Locally, the area is overlain with semiconsolidated lacustrine (lake) tuffaceous sediments, ash flow tuffs, and sedimentary rocks.

Energy Resources

The entire WSA is considered to have moderate potential for the occurrence of oil and gas. There were no oil and gas leases issued in the WSA as of October 16, 1987.

Mineral Resources

The eastern border of the WSA has moderate favorability, but no direct evidence, for the occurrence of diatomite. The environment necessary for the accumulation of diatomite is found in tuffaceous lake sediments which are present in the WSA. These sediments are similar to units found in other Tertiary basins in southeastern Oregon that are known to contain diatomite.

Aside from abundant road aggregate sources, there are no known occurrences of mineral deposits within the WSA. There were no mining claims in the WSA as of October 16, 1987.

Vegetation

There are five major vegetation types in the WSA. The most widespread is the low sagebrush/bunchgrass type. Other communities include big sagebrush/bunchgrass, juniper/bunchgrass, wet meadows and riparian areas, and silver sage.

The low sagebrush/bunchgrass type is found on shallow soil where the topography is flat or gently rolling. The estimated ecological status is late seral and the potential natural community species are low sagebrush and Idaho fescue.

The big sagebrush/bunchgrass community occurs on deep well-drained soils. These occur primarily in narrow strips along north slopes. The estimated ecological status is mid-seral. The major potential natural community species are Idaho fescue, bluebunch wheatgrass and mountain big sagebrush.

The western juniper/bunchgrass type is scattered throughout the study area, becoming thickest on the east face of Steens Mountain and along the sides of drainages. The primary understory grass is bluebunch wheatgrass. Idaho fescue occurs on the more moist sites. Other grasses occurring include Thurber's needlegrass, bottlebrush squirreltail, and Sandberg's bluegrass. In some higher areas, there is mountain mahogany mixed in with the junipers. Big sagebrush and rabbitbrush are also common. The estimated ecological status is late seral. The potential natural community species is bluebunch wheatgrass. Western juniper and big sagebrush will also be present in the potential natural community.

There are several areas of wet meadow vegetation that occur along the streams and around springs. The vegetation present consists of rushes, sedges, perennial forbs and Kentucky and Nevada bluegrasses. There are also small and scattered aspen stands. The aspens have bluegrasses, mountain brome and snowberry in the understory. The estimated ecological status of both areas is mid-seral. Potential natural community species on the meadows are primarily Nevada bluegrass and sedges. Aspen and snowberry are the potential natural community species in the aspen groves.

Riparian habitat occurs along 1.4 miles of Stonehouse Creek on public land. Riparian shrubs are rose, willow and chokecherry. The condition of riparian habitat is good along much of the upper part of Stonehouse Creek and poor to fair along the lower parts. The riparian vegetation is in late seral along much of the upper part of Stonehouse Creek and early to mid-seral along the lower parts. Riparian habitat also occurs along 0.7 miles of Squaw Creek, but this area has not been inventoried for riparian condition.

The vegetative community on Burnt Flat is silver sage. This area is seasonally flooded. The estimated ecological status is mid-seral. The potential natural community species are silver sage, creeping wildrye and mat muhly.

Another big sagebrush community exists on the eastern edge of the WSA. This is a big sagebrush/bluebunch wheatgrass community which is now part of an old crested wheatgrass seeding. The ecological status is estimated to be early seral, and the potential natural community contains bluebunch wheatgrass, big sagebrush and some bitterbrush.

Wildlife

The WSA supports a summer population of an estimated 800 deer, 75 antelope and 10 elk. Wintering populations are estimated to be 150 deer and 10 antelope.

Water for wildlife is well distributed throughout the WSA in years with normal or above normal precipitation. However, in years with below normal precipitation many of these water sources do not provide water throughout the summer.

Most of the summer antelope use occurs in the northern third of the WSA. Mule deer, elk and antelope all use the higher elevations of the WSA during the summer. Deer summer over all of the upper elevations while elk use is light. The lower elevations of the WSA provide winter habitat for mule deer and also summer habitat for antelope ranging within and outside of the WSA.

The steep slopes on the east side of this WSA provide excellent habitat for chukar, and populations in these areas are high. Sage grouse are abundant in the higher elevations of the WSA where big sagebrush and low sagebrush cover occurs. However, there are no known wintering areas. These birds are a candidate for Federal listing as threatened or endangered.

Golden eagle, American kestrel, prairie falcon and great horned owl are common raptor species. Other wildlife species include coyotes, mountain cottontail, common raven, common flicker, Say's phoebe, western meadowlark and the sagebrush lizard.

Waterfowl, primarily Canada geese, mallards, cinnamon teal and other dabbling ducks, use Squaw Lake as a migration rest area and for nesting. Greater sandhill cranes occasionally use Squaw Lake, although it may dry up during years of low precipitation.

Watershed

This WSA contains approximately 3 miles of perennial streams, namely Stonehouse Creek and Squaw Creek. Stonehouse Creek has small areas with headcutting problems and water quality is fair most of the year. Squaw Creek has poor water quality due to high concentrations of livestock and yearlong wild horse use.

Livestock Grazing

Portions of three grazing allotments are within the WSA. Table 4 summarizes current estimated potential livestock use in AUMs in the WSA.

Existing livestock developments (among the unnatural features listed in the Naturalness section) include 12 reservoirs, 2 irrigation ditches and 1 mile of fence. An old crested wheatgrass seeding located in the southeastern corner of the WSA has been reinvaded with sagebrush.

Motor vehicles are used approximately 30 times during the grazing season for salting, livestock management, and access to a private inholding.

Recreation Use

The BLM has an off-highway vehicle designation in effect which closed approximately 6,500 acres of the WSA to motorized vehicles in February 1987. This designation was the result of a management action in the current land use plan.

Most recreation use in the Stonehouse WSA is associated with hunting. Most of the hunters use motorized vehicles on the road and ways for access. Primitive recreation not associated with hunting is light.

Mule deer, antelope and chukar are the most commonly hunted game species. Deer hunting activity is moderate while antelope hunting activity is low. Hunting for chukars is moderate in the foothills and the drainages flowing out of the eastern side of the WSA. Chukar hunters use vehicles to gain access to hunting areas, but many park their vehicles along the county road and hike to their destinations.

Overall recreation use totals approximately 200 annual visitor use days.

Local Personal Income

Livestock use at the current level of 2,307 AUMs and recreation use totaling 200 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $27,684 for livestock and $2,400 related to recreation use of the WSA, for an overall total of $30,084. The Statewide EIS volume discusses the term local personal income and how income figures have been derived.

4. Environmental Consequences

This section discusses the environmental consequences of implementing each of the alternatives. Resources and activities not significantly affected by any of the alternatives are not discussed. The Statewide volume discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness: 21,325
Recommended nonsuitable for wilderness: 0

Impacts on Wilderness Values

All of the WSA would be designated wilderness, and wilderness values within the entire 21,325 acres would be protected by legislative mandate. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. Special features, including the steep, east-facing escarpment of the Steens Mountain fault block, the intermittent lakes, the crucial deer winter range and sage grouse would be protected.

Naturalness

The naturalness of the area's topographic features, particularly the low, rolling hills in the central portion of the WSA and the flat, open valleys and rolling hills in the northern quarter of the study area, would be enhanced by prohibiting motorized vehicle use.

An off-highway vehicle closure is in effect which closes 6,500 acres of WSA to motorized vehicle use. This area is located in the central portion of the WSA along the western boundary. The designation closes four ways (totaling approximately 4 miles) which provide access off the western boundary road. Closure of 10 miles of ways, the majority of which extend into the WSA from various points along the western boundary, would allow revegetation of 10 acres, eliminating their influence on approximately 1,400 acres or 6.6 percent of the WSA. Four miles of ways in the OHV closure are already revegetating. The 1.5 miles of road would remain open.

Maintenance of two fences totaling 1 mile in length would be completed using horses and pack animals; therefore, impacts would be minimal. Maintenance of two ditches and 12 reservoirs would require use of heavy mechanized equipment approximately once every 5 and 10 years, respectively. This infrequent use would not prevent the ways from revegetating.

Solitude

Opportunities for solitude would be improved by the elimination of motorized vehicles on 10 miles of ways, especially in the northern and central portions of the WSA. However, with continued use of 1.5 miles of road extending into the north-central portion of the area, disturbance from vehicle use would not be completely eliminated.

Maintenance of two irrigation ditches and 12 reservoirs with heavy mechanized equipment at 5 and 10 years, respectively, would cause short-term localized disturbance of solitude.

Primitive and Unconfined Recreation

Closure of the 10 miles of ways to motorized use, in addition to the 4 miles of ways already closed under an off-highway vehicle designation, would greatly increase the opportunities for primitive and unconfined recreation opportunities such as hiking, backpacking, camping and horseback riding by providing a more natural, wild setting.

Special Features

Closing 10 miles of ways would reduce impairment of scenic values and seasonal disturbance to wildlife such as deer and sage grouse inhabiting the study area.

Conclusion: Wilderness designation of the entire 21,325 acres within the Stonehouse WSA would result in protection and enhancement of the existing wilderness values.

Impacts to Energy and Mineral Development

Wilderness designation would close 21,000 acres to all forms of mineral entry. The 325 acres of split-estate lands and 920 acres of private land would remain open to mineral development.

Energy Development

Energy exploration and development would be precluded on 21,000 acres within the WSA. However, exploration could occur on 325 acres of split-estate land and 920 acres of private land.

Due to a lack of geologic evidence, no known petroleum or geothermal bearing formations, a subsurface not conducive to the formation of hydrocarbons, a thick volcanic covering on the surface and the absence of any existing mineral leases, only casual exploration for oil and gas and geothermal resources is projected on the 1,245 acres of private and split-estate lands.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for diatomite would be precluded on 21,000 acres. Exploration could occur on 325 acres of split-estate and 1,245 acres of private lands. Due to the lack of geologic evidence to support an extensive exploration/development program, no mineral development is projected.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Wilderness designation would not introduce any significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the Vegetation section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid-seral to late seral stages overall. The 10 miles of ways affecting 10 surface acres, once closed to vehicle use, would revegetate within approximately two to three growing seasons.

Conclusion: Wildlife habitat and populations would be maintained on 21,325 acres designated wilderness. Closure of ways would reduce vehicle use and disturbance to wildlife during the hunting seasons.

Impacts on Wildlife

Wildlife habitat for wintering populations of approximately 150 deer and 10 antelope and summering populations of 800 deer, 75 antelope and 10 elk and sage grouse would be maintained.

Adequate wildlife forage would be ensured in the preparation of livestock allotment management plans to meet ODFW management objectives for deer and sage grouse.

Considerable vehicle use occurs in the Burnt Flat area during antelope hunting season. High vehicle use occurs throughout the WSA during deer hunting season and closure of ways would markedly reduce such use and disturbance to wildlife during that period. Closure of the 10 miles of ways would have little effect on wildlife during the rest of the year due to the low amount of occurrence of vehicle use.

Conclusion: Habitat for game (including deer, antelope, elk and sage grouse) and nongame species and their existing levels of populations would be maintained throughout the WSA. Closure of ways would reduce vehicle use and disturbance to wildlife during the hunting seasons.

Impacts on Watershed

No projects are proposed under this alternative which would affect the watershed values.

Conclusion: Little change in condition of the watershed is expected.

Impacts on Livestock Grazing

Livestock use would remain at the current level of 2,307 AUMs. A proposed brush-control project of 1,010 acres to increase forage production in the Pollock allotment would be precluded, preventing a potential gain of 205 additional AUMs.

Vehicle use for livestock and range management, maintenance and range monitoring would be precluded on 10 miles of ways resulting in some increased expense and inconvenience to livestock operators. These actions would have to be conducted on foot or by the use of horses. Maintenance of two fences would be done on foot or by the use of riding and pack animals. Mechanized heavy equipment would be needed to maintain two ditches every 5 years and 12 reservoirs every 10 years.

Conclusion: Livestock use would remain at 2,307 AUMs. Precluding the brush-control project would result in foregone production of an additional 205 AUMs of livestock forage. Some inconvenience and increased costs for livestock management would be expected by precluding vehicle use on 10 miles of ways.

Impacts on Recreation Use

The entire 21,325 acres, (including the 6,500 acres already closed by vehicle designation) would be closed to motorized recreation use including 10 miles of ways. This would reduce recreation use in the WSA from approximately 200 visitor days to less than 100 visitor days per year.

The quality of primitive recreation activities, such as backpacking, camping, hiking, horseback riding and hunting would improve and use would increase slightly. Vehicle-oriented recreation would be displaced into other areas or be partly substituted by primitive recreation. However, expected increases in primitive recreation would not be sufficient to offset the expected reduction in vehicle-oriented recreation.

Reductions in deer and antelope hunting would be significant because, with only one road remaining open, a change in hunting methods would take place. Some deer and antelope hunters may continue to use the WSA, traveling by foot or horseback rather than using vehicles, but overall big game hunting use would decline. Upland bird hunting would be maintained as the majority of hunting occurs along the east face of the escarpment where hunters hike to specific hunting areas.

Conclusion: Wilderness designation would result in a net reduction in the area's annual recreation use-level from approximately 200 visitor days to less than 100 visitor days.

Impacts on Local Personal Income

Livestock grazing would remain at 2,307 AUMs. Overall recreation use would decrease by 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $1,200 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $1,200.

Partial

Recommended suitable for wilderness: 22,890 acres (assuming acquisition of 2,575 acres of private land)
Recommended nonsuitable for wilderness: 1,010 acres

Impacts on Wilderness Values

This alternative would add 22,890 acres to the NWPS, assuming 2,575 acres of interior and adjacent private lands are acquired as proposed under this alternative. The mineral estate of 325 acres of split-estate would also be acquired. Nine miles of ways and 1.5 miles of dead-end road would be closed. Currently 6,500 acres, including 4 miles of ways, are closed to vehicle use by a BLM off-highway vehicle designation. All of the WSA would be designated wilderness and wilderness values within the entire area would be protected by legislative mandate. Wilderness values of naturalness, solitude, and primitive and unconfined recreation would be preserved. Special features, including outstanding scenery and populations of sage grouse would be protected. Acquisition of the mineral estate and private land would prevent potential disturbance from mineral exploration and ensure the preservation of naturalness and opportunities for solitude and primitive recreation.

Under the partial wilderness alternative, 1,010 acres would be recommended nonsuitable as wilderness and would not receive special legislative protection. Wilderness values would be subject to the effects of projected management actions.

Naturalness

Closure of 9 miles of ways and 1.5 miles of road (in addition to the 4 miles of ways already closed by OHV designation) would allow revegetation and eliminate their unnatural influence on approximately 1,600 acres or 7 percent of the WSA, making them substantially unnoticeable.

Acquisition of the mineral estate of the split-estate land and private land would eliminate the possibility of development and the need for access to two parcels. By precluding development, the chance of additional disturbance would be diminished mainly on the 320-acre parcel in the north-central portion of the WSA.

One mile of way would remain open as it is within the 1,010 acres excluded from the WSA under this alternative. Development of a brush-control project would involve 1,010 acres of vegetative alteration in the nonsuitable portion which would visually influence naturalness on approximately 3,100 acres. Maintenance of two fences would be completed using horses and pack animals; therefore, impacts would be minimal. Maintenance of two irrigation ditches would require use of heavy mechanized equipment every 5 years, and maintenance of 12 reservoirs would require their use every 10 years. This infrequent use would not prevent the ways from revegetating.

Solitude

Opportunities for solitude would be improved by eliminating vehicle use on 1.5 miles of dead-end road and 9 miles of ways (in addition to those already closed by OHV designation).

Maintenance of two irrigation ditches and 12 reservoirs at 5 and 10-year intervals, respectively, would cause short-term disturbance of solitude when heavy mechanized equipment is brought into the area.

In the portion recommended nonsuitable, 1 mile of way would remain open, maintaining its impact on opportunities for solitude in this area.

Primitive and Unconfined Recreation

The opportunity to participate in a variety of primitive recreation activities (hiking, backpacking, horseback riding and hunting) would be greatly improved under this alternative. The elimination of vehicle use on 9 miles of ways and 1.5 mile of dead-end road and the acquisition of mineral estate and private lands further enhances the qualities of primitive recreation. Existing use of the area for primitive types of recreation is low, but it is anticipated that such use of the area would increase.

Development of a brush-control project in the southeastern corner of the WSA would impair or eliminate opportunities for primitive and unconfined recreation in and around the immediate area. Changes to the natural setting would cause visitors seeking primitive and unconfined recreation to avoid this area, with the possible exception of hunting.

Special Features

Closing a total of 10.5 miles of interior access routes in addition to the 4 miles of ways already closed under an off-highway vehicle designation would reduce impairment of scenic values and seasonal disturbance to wildlife such as deer and sage grouse. The acquisition of 2,575 acres of private land and 325 acres of non-Federal mineral estate would eliminate the possibility of development and need for motorized access to the private and split-estate parcels, thus preventing possible surface disturbance, impairment of scenic values and disruption of deer and sage grouse

The proposed brush-control project in the nonsuitable portion would impair scenic values and crucial deer winter range. Reducing vegetative diversity by eliminating brush and allowing grass species to increase in density would change the vegetative composition within the brush control area to the detriment of the wintering deer populations.

Conclusion: Wilderness designation of 22,890 would protect and enhance existing wilderness values. Within the 1,010 acres not designated wilderness, projected activities would directly impair wilderness values over that many acres with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

This alternative would close 22,890 acres (assuming acquisition of 325 acres of mineral estate and 2,575 acres of private land) to all forms of mineral entry in the area designated wilderness. Mineral development would be permitted in the 1,010 acres recommended as nonsuitable for wilderness.

Energy Development

Energy exploration and development would be precluded on 22,890 acres within the WSA. Exploration could occur in the nonsuitable area, but due to the lack of a high potential for oil and gas, no energy exploration and development is projected.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for diatomite would be precluded on 22,890 acres. Exploration could occur on the nonsuitable portion of the WSA; however, due to the lack of geological evidence to justify an extensive exploration program, no mineral development is projected.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Wilderness designation of the recommended suitable portion would not introduce any significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the Vegetation section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid-seral to late seral stages overall. The 10 miles of ways and 1.5 miles of roads, once closed to vehicle use would revegetate within approximately two to five growing seasons. In the portion of the WSA recommended nonsuitable as wilderness, the brush-control project would remove native vegetation on 1,010 surface acres.

Conclusion: In the suitable portion, the 10 miles of ways and 1.5 miles of roads, totaling 13 surface acres, would revegetate. In the nonsuitable area, native vegetation on 1,010 acres would be removed. Little or no change would occur to vegetation in the rest of the area.

Impacts on Wildlife

Wildlife habitat for approximately 10 wintering antelope, summering big game (800 deer, 75 antelope and 10 elk) and sage grouse would be maintained. However, the proposed livestock improvement (sagebrush control) in the nonsuitable portion which may benefit antelope by improving their habitat would adversely impact deer winter range by reducing forage in the Stonehouse Canyon area on the portion of the proposed brush control above 4,300-foot elevation which totals approximately 300 acres. In addition, many nongame species habitats would be damaged by sagebrush control with corresponding declines in populations.

Protection to wildlife habitat and wildlife populations would be enhanced by precluding mineral exploration on 325 acres of split-estate lands if acquired, and by precluding human disturbance to wildlife on 2,575 acres of private property, if acquired.

Considerable vehicle use occurs in the Burnt Flat area during antelope hunting season. High vehicle use occurs throughout the WSA during deer hunting season and closure of ways would markedly reduce such use and disturbance to wildlife during that period. Closure of 9 miles of ways and 1.5 miles of roads would have little effect on wildlife during the rest of the year due to the low amount of vehicle use occurring.

Conclusion: Wildlife habitat and populations on 22,890 acres designated wilderness would be maintained. Antelope habitat in the nonsuitable portion would be improved, but 300 acres of deer winter range in the portion of the area above 4,300 feet elevation and nongame species at lower elevations would be adversely affected. Disturbance to wildlife on the split-estate and private lands would be precluded. Closure of 9 miles of ways and 1.5 miles of dead-end road would reduce vehicle use and disturbance to wildlife.

Impacts on Watershed

Acquisition of private lands would add 2 miles of Squaw Creek to the WSA. Headcutting is evident on that portion of the creek and water quality is poor due to livestock and wild horse grazing. No projects are proposed under this alternative which would affect watershed values on any of the perennial streams.

Conclusion: Little change in condition of the watershed is expected.

Impacts on Livestock Grazing

Livestock grazing would continue at the current level in the suitable portion.

Vehicle use for livestock and range management, maintenance and range monitoring would be precluded on 9 miles of ways and 1.5 miles of dead-end road. These actions would have to be conducted on foot or by the use of horses. Maintenance of two fences totaling 1 mile in length would be done on foot or by the use of riding and pack animals. Mechanized, heavy equipment would be needed to maintain two ditches and 12 reservoirs approximately once every 5 and 10 years, respectively. This would result in some increased expense and inconvenience to livestock operators.

In the nonsuitable portion of the WSA, a 1,010-acre brush-control project would be completed to produce 205 AUMs of additional livestock forage. A 1-mile long way would remain open for livestock management and maintenance.

Conclusion: In the suitable portion, livestock grazing use would continue at the current level. Livestock use would increase by 205 AUMs in the nonsuitable portion of the WSA. Increased expense and inconvenience for livestock management would be expected by precluding vehicle use on 9 miles of ways and 1.5 miles of dead-end road.

Impacts on Recreation

Motorized use would be precluded on 22,890 acres including 9 miles of ways and 1.5 miles of dead-end road. This would reduce recreation use in the WSA from approximately 200 visitor days to less than 100 visitor days per year.

The quality of primitive recreation activities such as backpacking, camping, hiking, horseback riding and hunting would improve and use would increase slightly in the recommended suitable area. However, the increase in primitive recreation would not be sufficient to offset the reduction in vehicle-oriented recreation.

Overall recreational use in the WSA would decline because increases in primitive recreation would not be sufficient to offset expected reductions in vehicle-oriented recreation. Reductions in deer and antelope hunting would be significant because, with only one way remaining open in the nonsuitable portion, changes in hunting methods would take place due to closure of the 9 miles of ways and 1.5 miles of dead-end road in the suitable portion of the WSA. A change in vegetative type from brush to grass by developing a 1,010-acre brush control project would reduce deer numbers and, in turn, reduce deer hunting opportunities in the nonsuitable portion. However, antelope numbers would increase, thus increasing antelope hunting opportunities in the same area.

Conclusion: Wilderness designation would result in a net reduction in the area's overall recreation use from approximately 200 visitor days to less than 100 visitor days per year. Deer hunting opportunities would decrease in the nonsuitable area where a 1,010-acre brush control project would be developed, but antelope hunting opportunities would increase.

Impacts on Local Personal Income

Livestock grazing would increase by 205 AUMs. Overall recreation use would decrease by 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $1,260 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by approximately $1,300.

No Wilderness/No Action (Proposed Action)

Recommended suitable for wilderness: 0
Recommended nonsuitable for wilderness: 21,325

Impacts on Wilderness Values

Under this alternative, the entire 21,325 acres would not be designated wilderness, and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation, and the area's special features would be subject to the effects of projected actions, including casual mineral exploration, range projects, and motorized vehicle use (except in the 6,500-acre OHV closure where vehicle use would be precluded). Any developments within the WSA could have adverse effects on the area's wilderness characteristics.

Naturalness

Naturalness would be disturbed or visually influenced on approximately 4,800 acres. Continued vehicle use on 10 miles of ways and 1.5 miles of roads would maintain the impact of vehicle tracks upon naturalness on approximately 1,400 acres (6.6 percent of the WSA) for the ways and approximately 300 acres (1.4 percent of the WSA) for the road. Most of this influence upon the area's naturalness occurs on the high elevation country in the western half of the WSA.

Development of a brush-control project would involve 1,010 acres of vegetative alteration in the southeastern corner of the WSA. The visual influence of the brush control would affect naturalness over approximately 3,100 acres.

Solitude

Continued vehicle use on 10 miles of ways and 1.5 miles of road would maintain repeated short-term, local impairment of opportunities for solitude, particularly in the higher elevations of the western portion of the WSA. Four miles of ways would continue to be closed under the present off-highway vehicle designation, preventing disturbances to solitude in this area.

Primitive and Unconfined Recreation

Vehicle use would continue on the existing road and 10 miles of ways not closed by the present off-highway vehicle designation. Such use would continue to intrude upon primitive, non-motorized recreation opportunities such as hiking, backpacking, camping, hunting and horseback riding in the localized area around the 10 miles of ways and 1.5 miles of road.

Development of a brush-control project in the southeastern corner of the WSA would impair or eliminate opportunities for primitive and unconfined recreation in and around the immediate area. Changes to the natural setting would cause visitors seeking primitive and unconfined recreation to avoid this area, with the possible exception of antelope hunting.

Special Features

Continued vehicle use of the existing road and 10 miles of ways not closed by the present off-highway vehicle designation would maintain the impacts upon special features. These impacts include impairment of scenic vistas and minor seasonal disturbance of deer, antelope and sage grouse.

The proposed 1,010-acre brush-control project in the southeastern corner of the WSA would impair scenic values and crucial deer winter range. Reducing vegetative diversity by eliminating brush and allowing grass species to increase in density would change the vegetative composition within the brush control area to the detriment of the wintering deer population.

Conclusion: In the absence of wilderness designation, projected activities and continued uses would impair wilderness values both directly and indirectly over approximately 4,800 acres, with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

The entire WSA would remain open to mineral entry.

Energy Development

All 21,325 acres would be open for energy exploration and development, including oil and gas. Due to a lack of geological evidence, no known petroleum or geothermal-bearing formations, a subsurface not conducive to the formation of hydrocarbons, a thick volcanic covering on the surface and the absence of any existing mineral leases, only casual exploration for oil and gas and geothermal resources is projected.

Conclusion: No impact to energy development is expected.

Mineral Development

All 21,325 acres would be open to mineral entry, including diatomite. However, no mineral development is projected because no developable deposits are known to exist.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

The 10 miles of ways would not revegetate due to continued use. The brush-control project would remove native vegetation on 1,010 surface acres. Little or no change would take place to vegetative composition or ecological status over the rest of the WSA.

Conclusion: Native vegetation would be removed on 1,010 acres. There would be no change to vegetation in the remainder of the WSA.

Impacts on Wildlife

Wildlife habitat for approximately 10 wintering antelope, summering big game (800 deer, 75 antelope and 10 elk) and sage grouse would be maintained.

Sagebrush control on 1,010 acres could adversely affect approximately 300 acres of deer winter range above the 4,300-foot elevation, but improve antelope range. Many nongame species would also have their habitats adversely impacted by this proposed project. Mineral exploration would temporarily disturb game and nongame species within the immediate area of exploration activity. Vehicle use occurs throughout the WSA during deer hunting season, and disturbance to wildlife would continue with the ways and road remaining open. Allowing 10 miles of ways and 1.5 miles of dead-end road to remain open would have little effect on wildlife during the rest of the year due to the low amount of occurring vehicle use.

Conclusion: Wildlife habitat and populations would be maintained on 21,325 acres. The 300 acres of deer winter range in the portion of the proposed 1,010-acre brush-control project above 4,300 feet elevation and nongame species at lower elevations would be adversely affected while antelope habitat would be improved. Wildlife populations of game and nongame species would sustain minor and temporary levels of harassment due to human activity associated with casual mining exploration. The level of disturbance to wildlife would continue during the hunting season by allowing vehicle access routes to remain open.

Impacts on Watershed

No projects are proposed under this alternative which would affect the watershed values.

Conclusion: No change in condition of the watershed is expected.

Impacts on Livestock Grazing

The proposed brush control on 1,010 acres in an old crested wheatgrass seeding would be implemented and the increased forage of 205 AUMs licensed for a total of 2,512 AUMs of livestock use. Vehicle use would continue on all ways and roads for livestock monitoring, management and maintenance of rangeland developments except in the 6,500-acre OHV closure.

Conclusion: Livestock use would be increased by 205 AUMs by implementing a proposed 1,010-acre brush-control project. Vehicle and heavy equipment would be allowed on all ways and roads, except within the 6,500-acre OHV closure.

Impacts on Recreation Use

Primitive recreation would be subject to disturbance from other land uses such as continued vehicle use and range projects. Motorized recreation use would continue in the WSA (except in the 6,500-acre OHV closure), but would generally be limited to 1.5 miles of roads and 10 miles of ways because of the nature of the terrain. Projected use patterns indicate that the current level of 200 visitor days per year would remain the same over time.

Conclusion: Recreation use would remain at the current level of 200 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would increase by 205 AUMs. Overall recreation use would remain at 200 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $2,460 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by approximately $2,500.

Unavoidable Adverse Impacts of the Proposed Action

Under the Proposed Action (No Wilderness/No Action) development of a brush-control project would lead to unavoidable adverse impacts to wilderness values as a result of 1,010 acres of vegetative alteration, which visually influences approximately 3,100 acres.

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity

Under the Proposed Action, all short-term uses would continue and future development options would remain open. Long-term productivity of wilderness would be lost on 3,100 acres from vegetative alteration, with further declines from other uses over the long term.

Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, development of a brush-control project would result in an irreversible commitment of the wilderness resources on 1,010 acres and indirectly on 3,100 acres, as the reinvading brush and natural vegetation would continue to be removed on a periodic basis.

5. Wilderness Manageability and Rationale for the Proposed Action

Manageability of the Area as Wilderness

Although the Stonehouse WSA is manageable under both the all wilderness and partial alternatives, the study area does have some manageability problems. The manageability problems include the long-standing use of vehicles for recreation in the area, the presence of several private inholdings and parcels of split-estate land and the substantial amount of adjacent private land.

Hunting is a popular recreational activity throughout most of this WSA. Many of the hunters use vehicles to gain access within the upper elevations of the area (western side). Although much of this vehicle use is confined to the boundary roads, the use of ways and cross-country travel also occurs. Because the area has been used in this manner for many years, management of the area to prohibit vehicle use and protect wilderness values would be difficult.

The private inholdings and split-estate land within the study area could present management difficulties under the all wilderness alternative. Development on these parcels, although not known to be planned at this time, and the need for access across public lands would make it hard to manage this area to preserve its wilderness qualities. These lands are not fenced or otherwise identified on the ground. Even though these parcels are located away from the primary recreation attraction of the area (the ridgeline), recreationists could also visit portions of the wilderness next to the private lands. Visitors might wander onto the private land, and acquiring these parcels as proposed under the partial alternatives would eliminate this potential management problem. Acquisition of the mineral estate would improve manageability.

Rationale for Selection of the Preferred Alternative

The no wilderness/no action alternative is the proposed action because the use of vehicles in the area outweigh the benefits of preserving wilderness values and because of the difficulties in managing the area to preserve its wilderness values. The study area would be difficult to manage as wilderness due to the traditional vehicle-oriented use by hunters and the lack of identifiable boundaries.

6. Summary and Analysis of Public Comments

Following is a summary of public comments specific to the WSA concerning adequacy of the analysis in this appendix and responses to those comments. These comments were received both in writing and oral testimony at public hearings during the comment periods for the 1985 Draft EIS and the 1987 Supplement to the Draft EIS. Comments concerning the BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning statewide issues and analysis are addressed in the Statewide volume.

Comment: Winter and summer range should be a special feature. **Response:** Big game and their ranges are discussed and analyzed under the wildlife portion of the various sections of the WSA appendices. The crucial deer winter range is noted as a special feature.

Comment: Inadequate recreation use analysis. **Response:** See analysis under Impacts on Primitive and Unconfined Recreation and Impacts on Recreation in Section 4, Environmental Consequences. Visitor use data has been incorporated in the analysis of recreation use by type when available.

Comment: EIS should analyze a wider range of alternatives, i.e. Greater Steens alternative. **Response:** It is not feasible to close the boundary roads for the reasons described in Section 2, Description of the Alternatives, under the discussion of alternatives considered but not analyzed.

Comment: Economic values of wilderness needs identification. **Response:** These values are addressed on a statewide basis and not as issues for specific WSA appendices.

Table 1. Summary of Proposed Management Under Each Alternative, Stonehouse WSA (OR-2-23L)

Proposed Management	All Wilderness	Partial	No Wilderness/ No Action
Acres Designated as Wilderness	21,325	20,315	0
Acres Closed to OHVs by Wilderness Designation [1]	14,825	13,815	0
Miles of Roads Closed	0	1.5	0
Miles of Ways Closed [2]	10	9	0
Acres of Full Fee Estate Acquired [3]	0	2,575	0
Acres of Mineral Estate Acquired [4]	0	325	0
Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation	21,000	19,990	0
Vegetative manipulation for Livestock: Bruch Control without Seeding (acres)	0	1,010	1,010

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[1] A total of 6,500 acres are already closed to motorized vehicle use by an off-highway vehicle designation as of February 20, 1987.
[2] Four miles of ways are already closed to motorized vehicle use by an off-highway vehicle designation as of February 20, 1987.
[3] Upon acquisition, these additional lands would be incorporated into the wilderness area, closed to vehicle use, and withdrawn from mineral location and leasing.
[4] Upon acquisition of mineral estate, these lands would be withdrawn from mineral location and leasing.

Table 2. Summary of Environmental Consequences of Alternatives, Stonehouse WSA (OR-2-23L)

Resource or Activity	All Wilderness	Partial	No Wilderness/No Action (Proposed Action)
Wilderness Values	Wilderness designation of the entire 2l,325 acres within the Stonehouse WSA would result in protection and enhancement of the existing wilderness values.	Wilderness designation of 22,890 acres (assuming acquisition of 2,575 acres of private property) would protect and enhance existing wilderness values. Within the 1,010 acres not designated wilderness, projected activities would impair wilderness values over that many acres with further declines from other potential uses over the long term.	In the absence of wilderness designation, projected activities and continued uses would impair wilderness values both directly and indirectly over approximately 4,800 acres, with further declines from other potential uses over the long term.
Energy and Mineral Development	No impact to energy or mineral development is expected.	No impact to energy or mineral development is expected.	No impact to energy or mineral development is expected.
Vegetation	The l0 miles of ways affecting l0 surface acres would revegetate naturally. Little or no change would occur to vegetation in the rest of the area.	In the suitable area, the l0 miles of ways and l.5 miles of road totaling l3 surface acres would revegetate. In the non-suitable area, a brush control project would remove native vegetation on 1,010 acres. Little or no change would occur to vegetation in the rest of the area.	The projected brush control project would remove the native vegetation on l,0l0 acres. There would be no change to vegetation in the remainder of the WSA.
Wildlife	Wildlife habitat and populations would be maintained on 21,325 acres designated wilderness. Closure of ways would reduce vehicle use and distrubance to wildlife during the hunting seasons.	Wildlife habitat and populations would be maintained on 22,890 acres designated wilderness. Antelope habitat in the nonsuitable portion would be improved, but 300 acres of deer winter range in the portion of the area above 4,300 feet elevation and nongame species at lower elevations would be adversely affected. Disturbance to wildlife on the split-estate and private lands would be precluded. Closure of 9 miles of ways and 1.5 miles of dead-end road would reduce vehicle use and disturbance to wildlife.	Wildlife habitat and populations would be maintained on 21,327 acres. The 300 acres of deer winter range in the portion of the proposed 1,010-acre brush control project above 4,300 feet elevation and nongame species at lower elevations would be adversely affected, while antelope habitat would be improved. Wildlife populations of game and nongame species would sustain minor and temporary levels of harassment due to human activity associated with casual mining exploration. The level of disturbance to wildlife would continue during the hunting season by allowing vehicle access routes to remain open.
Watershed	Little change in condition of the watershed is expected.	Little change in condition of the watershed is expected.	No change in condition of the watershed is expected.
Livestock Grazing	Livestock use would remain at 2,307 AUMs. Precluding the brush control project would result in foregone production of an additional 205 AUMs of livestock forage. Some inconvenience and increased costs for livestock management would be expected by precluding vehicle use on 10 miles of ways.	In the suitable portion, livestock grazing use would continue at the current level. Livestock use would increase by 205 AUMs in the nonsuitable portion of the WSA. Increased expense and inconvenience for livestock management would be expected by precluding vehicle use on 9 miles of ways and 1.5 miles of dead-end road.	Livestock use would be increased. by 205 AUMs by implementing the proposed l,0l0 acre brush control project. Vehicle and heavy equipment would be allowed on all ways and roads, except within the 6,500-acre OHV closure.

Table 2. Summary of Environmental Consequences of Alternatives, Stonehouse WSA (OR-2-23L) (continued)

Resource or Activity	All Wilderness	Partial	No Wilderness/No Action (Proposed Action)
Recreation Use	Wilderness designation would result in a net reduction in the area's annual recreation use level from approximately 200 visitor days to less than 100 visitor days.	Wilderness designation would result in a net reduction in the area's overall recreation use from approximately 200 visitor days to less than 100 visitor days per year. Deer hunting opportunities would decrease in the nonsuitable area where a 1,010-acre brush control project would be developed, but antelope hunting opportunities would increase.	Recreation use would remain at the current level of 200 visitor days per year.
Local Personal Income	Annual local personal income would decrease by approximately $1,200.	Annual local personal income would increase by approximately $1,300.	Annual local personal income would increase by approximately $2,500.

Table 3. Classification of Energy and Mineral Potential, Stonehouse WSA (OR-2-23L)

Commodity	Area	Level of Potential	Level of Certainty
Metals (mercury)	Entire WSA	L	B
Geothermal	Entire WSA	O	B
Uranium/Thorium	Entire WSA	O	A
Coal	Entire WSA	L	C
Oil/Gas	Entire WSA	M	B
Tar Sands/Oil Shale	Entire WSA	O	C
Limestone	Entire WSA	O	B
Bentonite	Entire WSA	L	A
Diatomite	See map 4	M	A
	Rest of WSA	O	B
Zeolites	Entire WSA	L	A
Sodium	Entire WSA	L	A

Legend:

Level of Potential

O - No indication for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Moderate potential for accumulations of energy/mineral resource
H- High potential for accumulations of energy/mineral resource

Level of Certainty

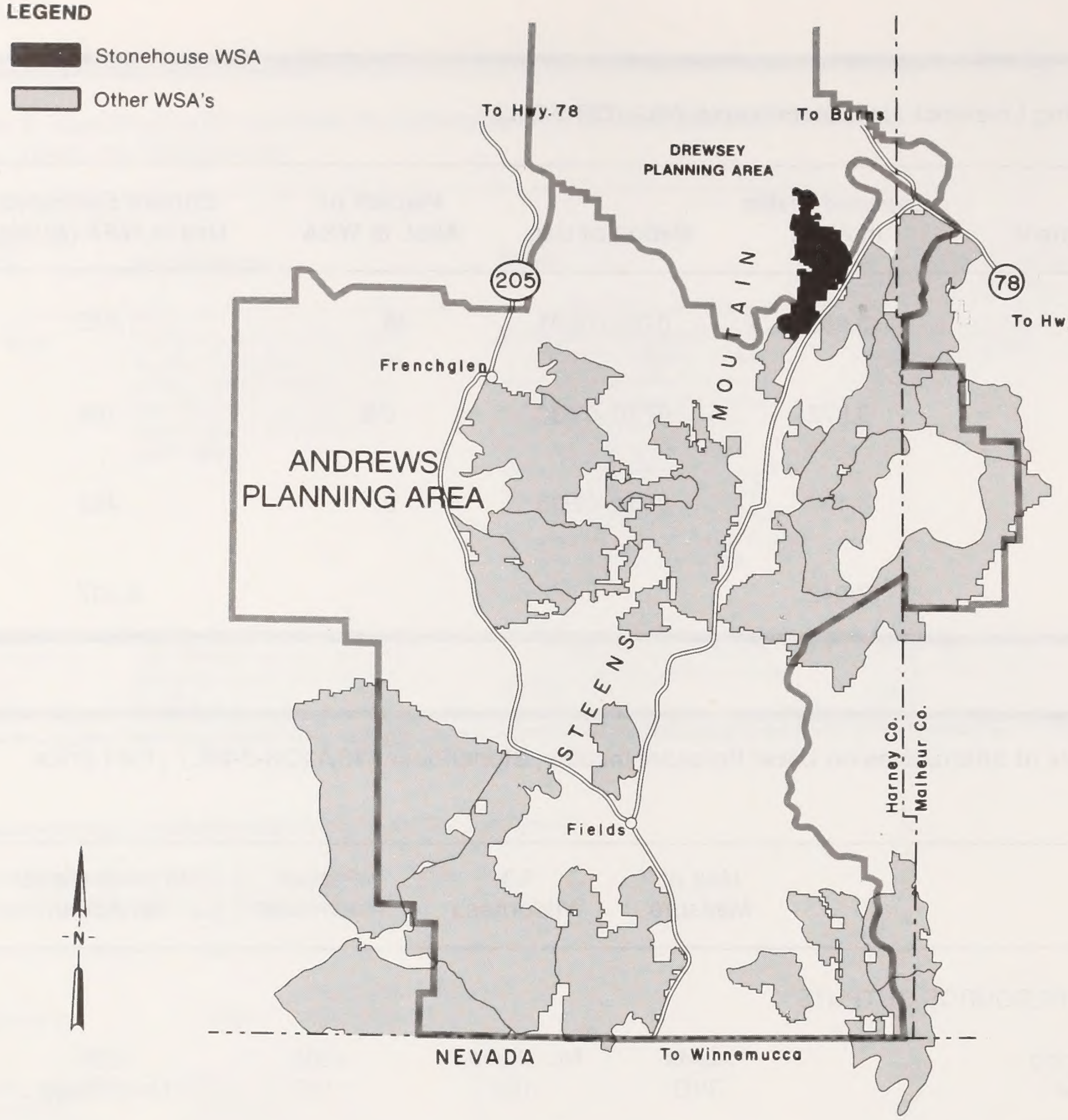
A - Insufficient data or no direct evidence
B - Indirect evidence available
C - Direct evidence but quantitatively minimal
D - Abundant direct and indirect evidence

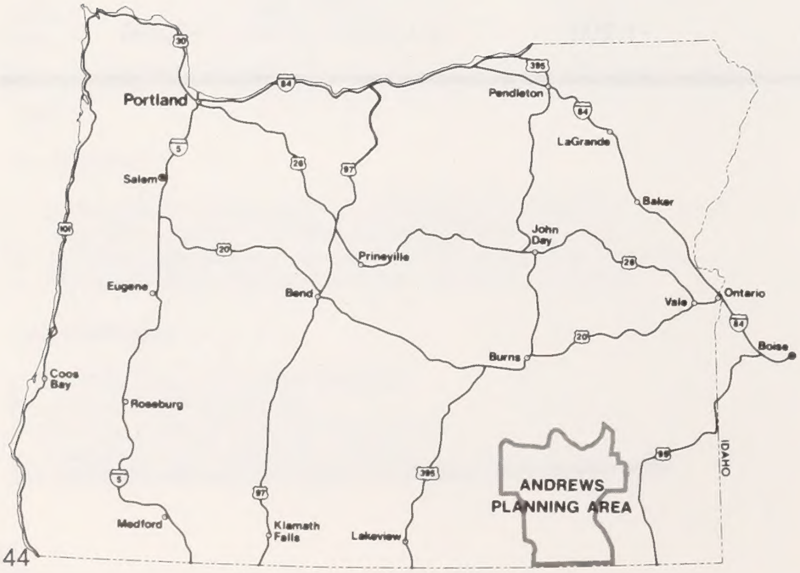
Table 4. Existing Livestock Use, Stonehouse WSA (OR-2-23L)

Grazing Allotment	Licensed AUMs in Allot.	Period of Use	Percent of Allot. in WSA	Current Estimated Use in WSA (AUMs)
Burnt Flat (No. 5313)	3,863	07/01-10/31	46	1,672
Alvord (No. 6012)	9,072	07/01-09/30	0.5	185
Pollock (No. 6011)	4,107	04/01-09/30	8	450
Total	17,042			2,307

Table 5. Effects of Alternatives on Local Personal Income, Stonehouse WSA (OR-2-23L) (1981 price levels)

Item	Unit of Measure	All Wilderness	Partial Wilderness	No Wilderness/ No Action
CHANGES IN RESOURCE OUTPUTS				
Livestock Grazing	AUMs	No Change	+205	+205
Recreation Use	RVD	-100	-100	No Change
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES				
Livestock Grazing	$	0	+2,460	+2,460
Recreation Use	$	-1,200	-1,200	0
Total	$	-1,200	+1,260	+2,460





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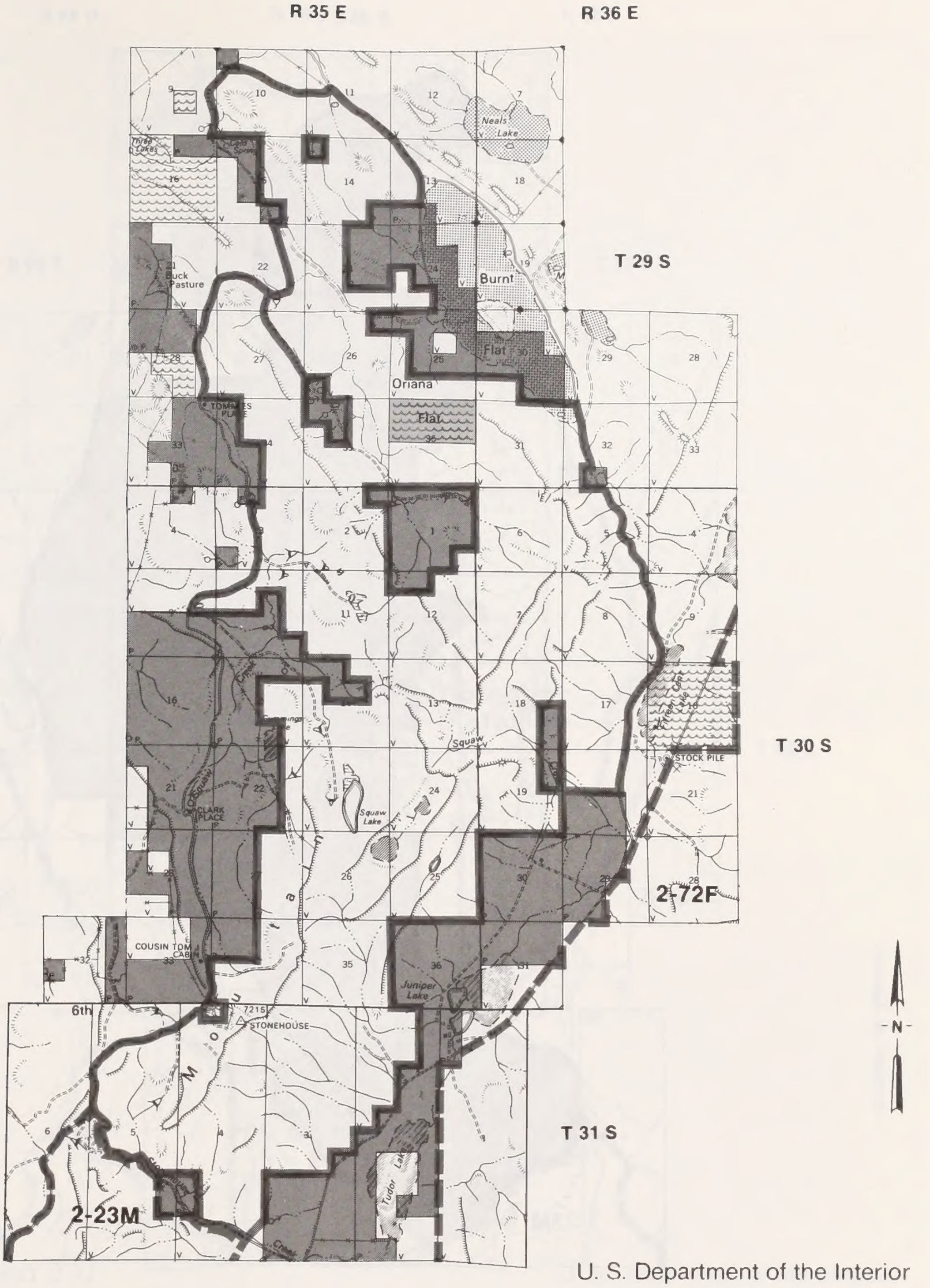
Burns District

Stonehouse WSA
OR-2-23L

LOCATION MAP

10 0 10 MILES

MAP 1



LEGEND

- ▬ Wilderness Study Area Boundary
- ▬ ▬ Boundary of Adjacent Wilderness Study Areas
- ☐ Bureau of Land Management
- ■ Private
- ▤ BLM Surface-State or Private Subsurface (Split Estate)
- ▨ BLM Land Studied Under Section 202 of FLPMA (Other BLM Land in WSA Studied Under Section 603 of FLPMA)

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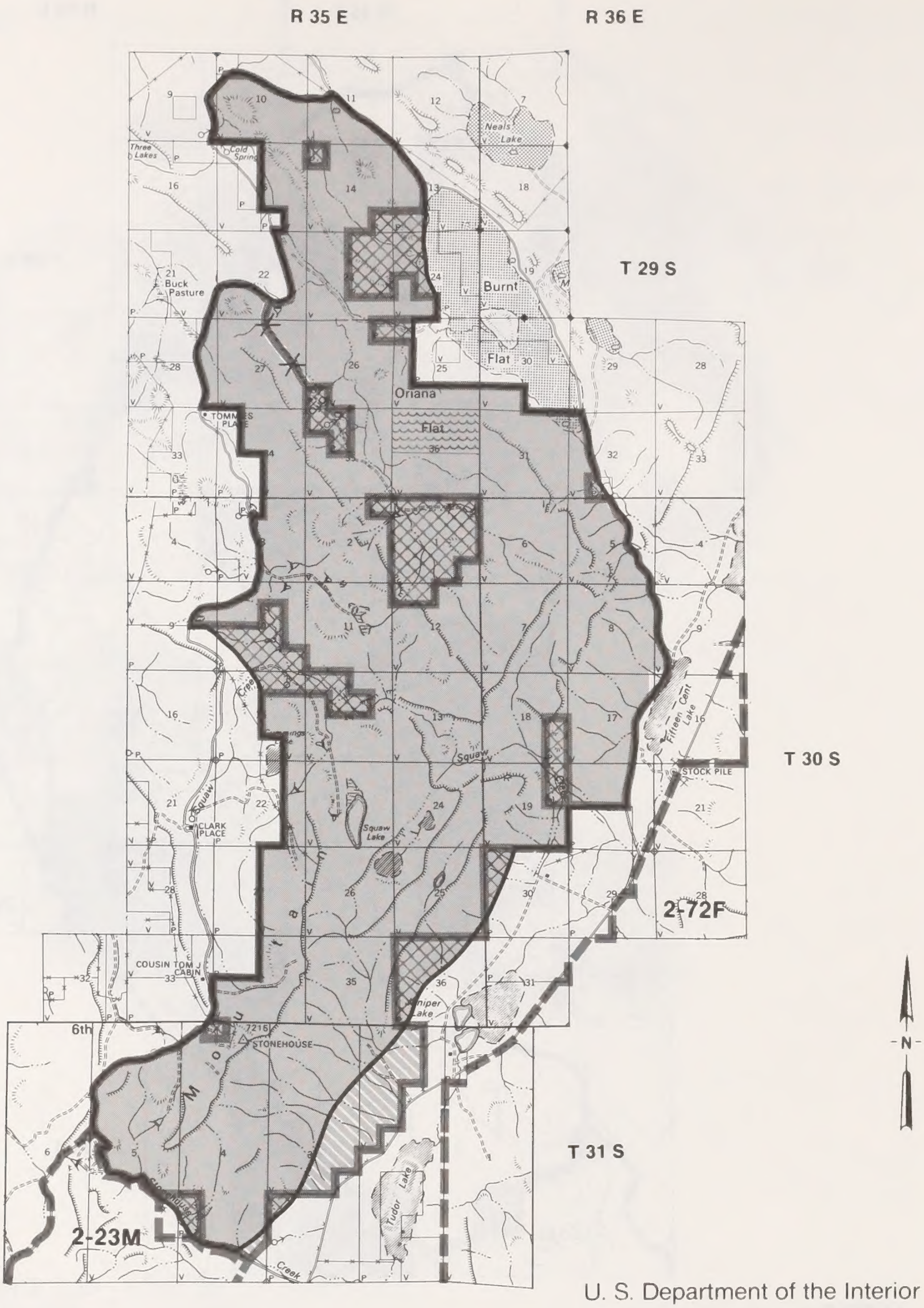
OR-2-23L

LAND OWNERSHIP

MAP 2



LEGEND

▬ Wilderness Study Area Boundary

▬ ▬ Boundary of Adjacent Wilderness Study Areas

▭ Recommended Suitable for Wilderness

▨ Recommended Non-suitable for Wilderness

▩ Non-Federal Land within Recommended Wilderness

≋ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness

✕✕ Recommended Road Closure

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Stonehouse WSA
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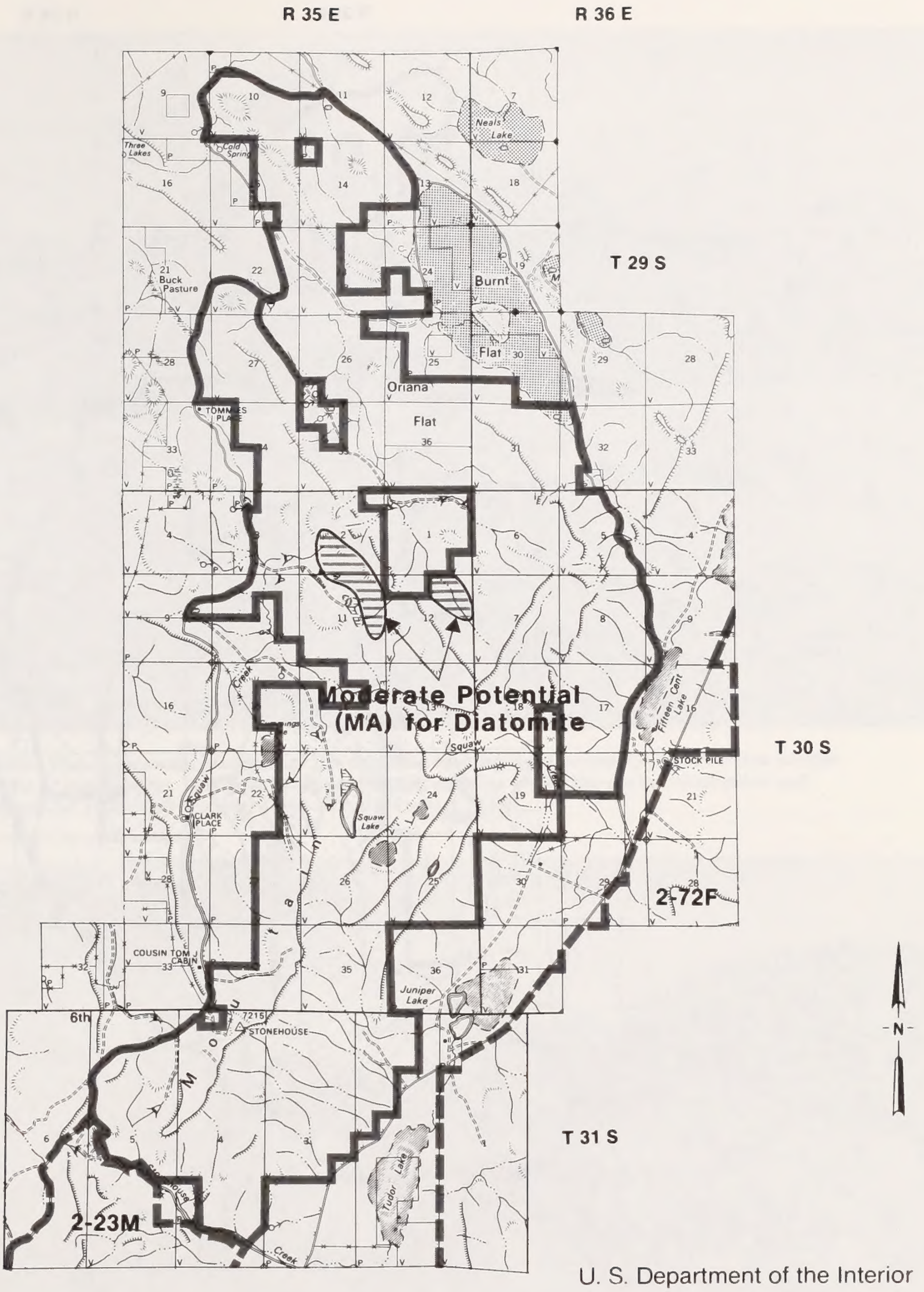
PARTIAL ALTERNATIVE

1 0 1 2 MILES

MAP 3



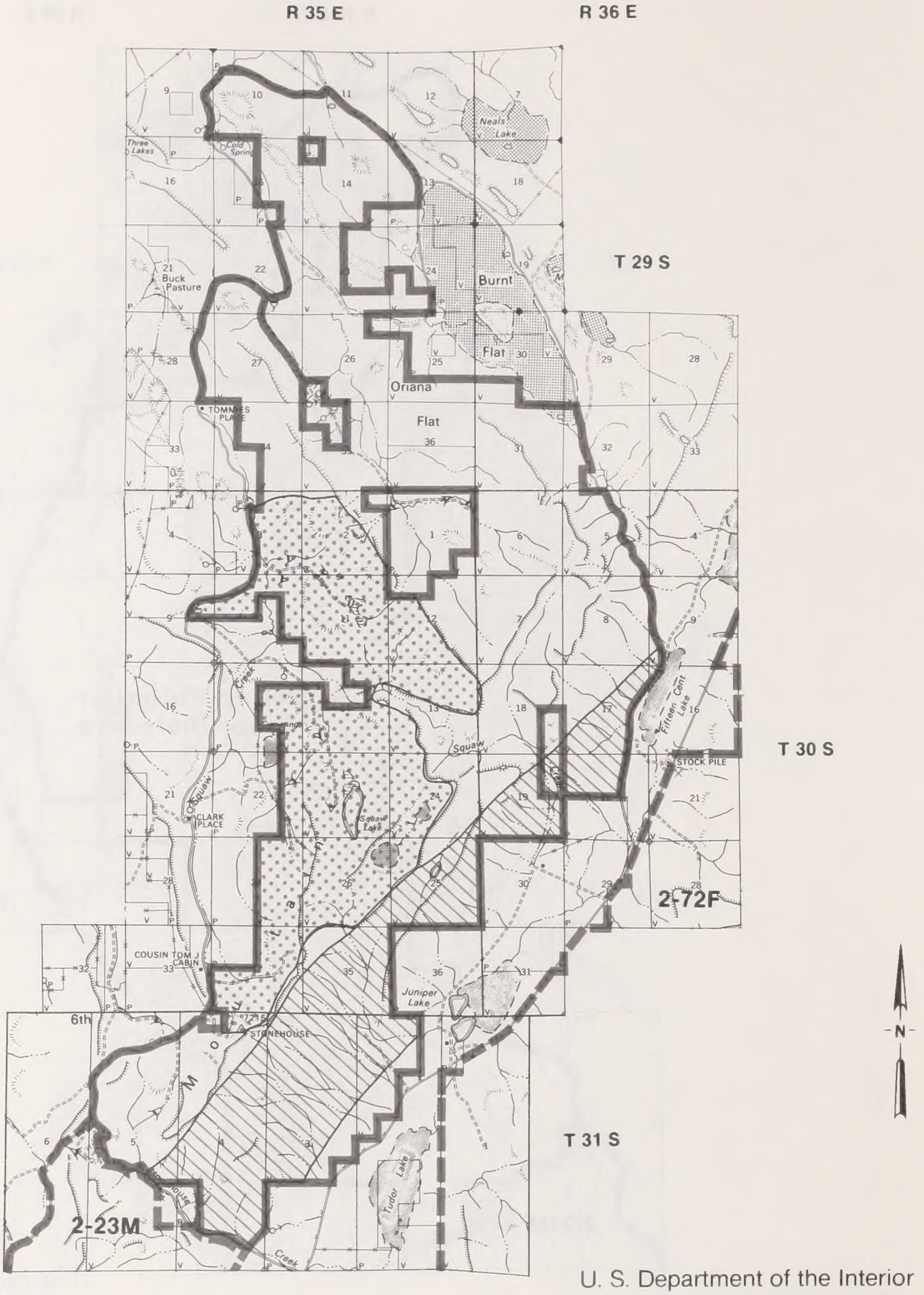
U. S. Department of the Interior
Bureau of Land Management
Burns District

Stonehouse WSA
OR-2-23L

**Entire WSA:
Moderate Potential
(MB) for Oil and Gas**

MODERATE OR HIGH POTENTIAL MINERAL OR ENERGY RESOURCES

MAP 4



▒ Area Closed to Motorized Vehicles

▨ Deer Winter Range

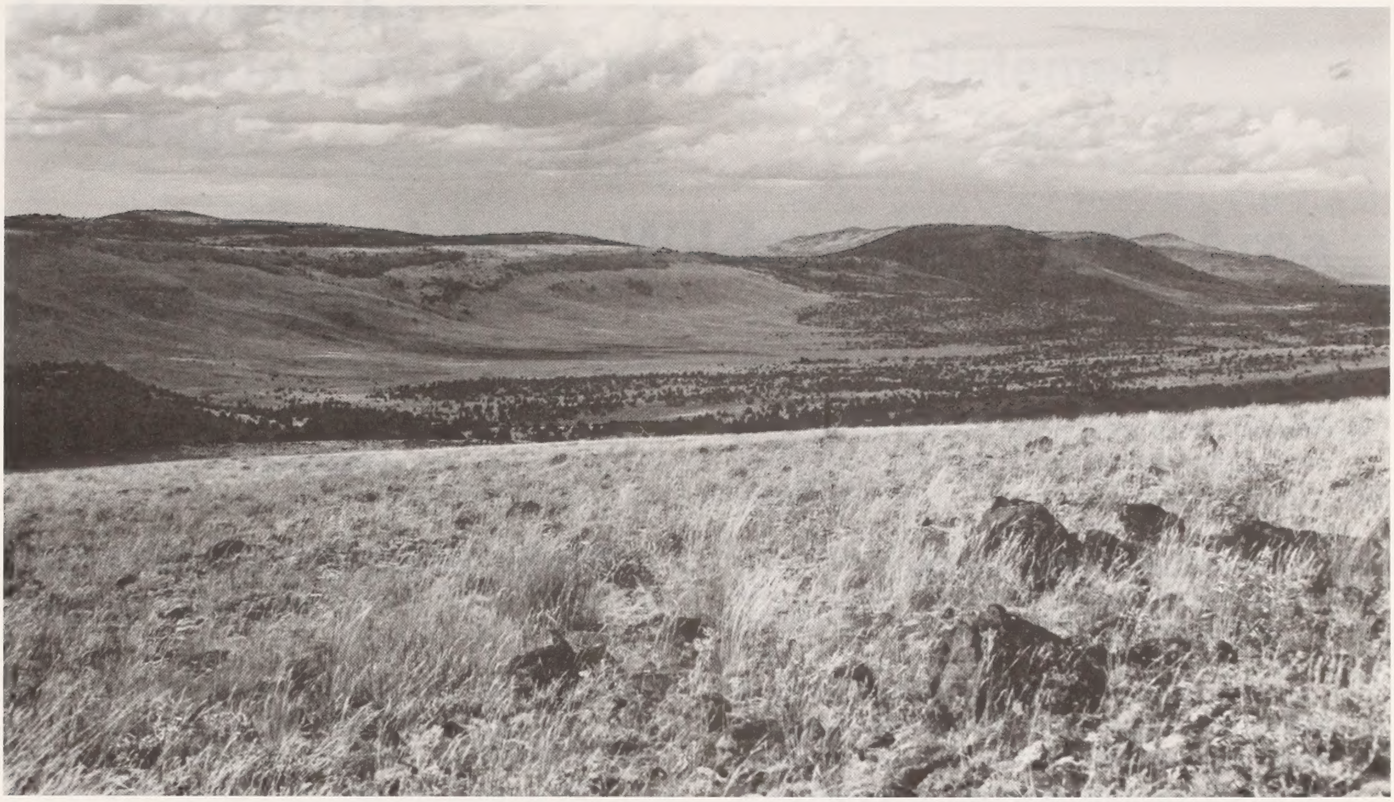
U. S. Department of the Interior
Bureau of Land Management
Burns District

Stonehouse WSA
OR-2-23L

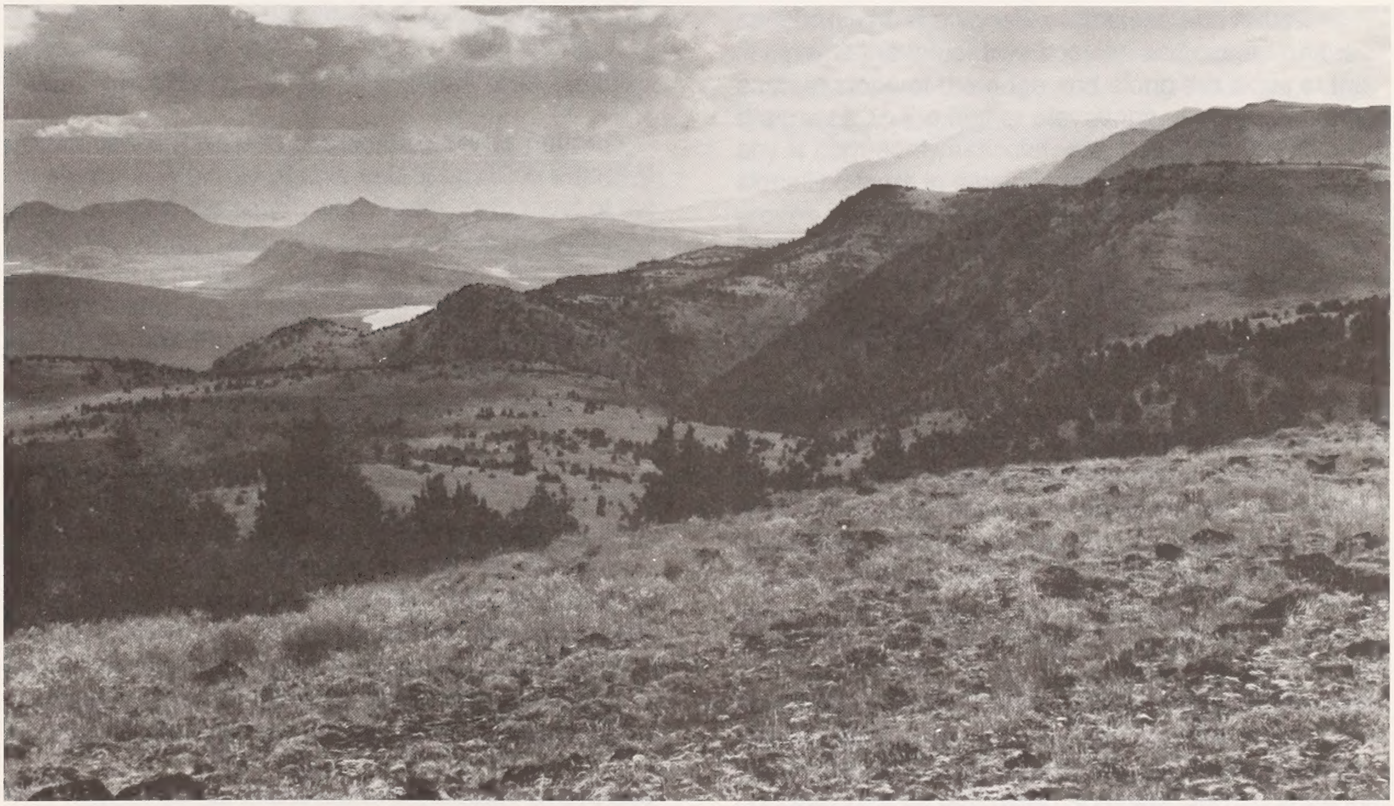
SPECIAL FEATURES

1 0 1 2 MILES

MAP 5



Stonehouse WSA, OR-2-23L. Plateau country just west of the ridgeline looking west across Oriana Flat (the juniper covered basin in the middle of the picture). This area is recommended suitable under the partial alternative and nonsuitable under the proposed action (no wilderness/no action). August 1983.



Stonehouse WSA, OR-2-23L. Looking south along the Steens ridgeline on the eastern side of the WSA. The canyon in the middle of the picture is Squaw Creek. From this point, part of the West Peak (OR-2-72J) and Table Mountain (OR-2-72I) WSAs are visible in the distance on the left, while the High Steens WSA (OR-2-85F) is visible in the distance to the right of center. Within the area recommended suitable under the partial alternative and nonsuitable under the proposed action (no wilderness/no action) alternative. August 1983.

Appendix to the Wilderness Environmental Impact Statement for Oregon

Lower Stonehouse Wilderness Study Area (OR-2-23M)

1. Introduction

General Description of the Study Area

The Lower Stonehouse Wilderness Study Area (WSA) is located about 60 miles southeast of Burns in Harney County and 16 miles south of State Highway 78, along the county road which runs from Oregon State Highway 78, near Folly Farm, to Fields (see Map 1).

The study area contains 8,090 acres of public land in a somewhat rectangular shape, 6 miles long and 2.5 miles wide (see Map 2). In addition, there is one parcel of private land in the WSA totaling 160 acres.

Private lands form part of the study area's boundary on all sides. A parcel of split-estate land lies adjacent to the area on the southwest. Roads form most of the remainder of the boundary except along the eastern side where a portion of the boundary follows the edge of two crested wheatgrass seedings. Low standard dirt roads form the northern and western boundary lines, and a high standard gravel county road occurs along 1.7 miles of the southeastern boundary.

The Lower Stonehouse WSA is located along the northern portion of the Steens Mountain fault block. The topography of this area is similar to that of other study areas along the eastern face of the mountain. The WSA includes a portion of the steep east-facing Steens escarpment as well as gentle, westerly sloping areas. The Steens ridgeline, rising an average of 2,000 feet, is the dominant topographic feature running lengthwise through the center of the area.

The highest points in the study area occur where two high points on the ridgeline reach an elevation of over 7,300 feet. One of these peaks (the highest point in the WSA at 7,352 feet) is just within the study area along the western boundary. The lowest elevation in the WSA (4,280 feet) occurs on the southeastern boundary.

West of the ridgeline, the topography is gentle, with broad, rolling, open terrain. However, this part of the WSA is less than a quarter of the study area.

Many spring-fed intermittent streams flow to the southeast, from the top of the ridge down the face toward the eastern boundary. Stonehouse Creek, one of the more prominent drainages, is in the northern portion of the study area.

The vegetation in the study area includes western juniper, mountain mahogany, aspen, big and low sagebrush, and a variety of grasses and forbs. Juniper is the major tree species and occurs on the eastern slope of the ridge and along the sides of the drainages. In the higher elevations, mountain mahogany is commonly associated with juniper and occasionally occurs in small dense clusters. Scattered groves of aspen are found in the northwestern portion of the study area.

Interrelationships

Adjacent to the northern boundary of the study area is the Stonehouse WSA (OR-2-23L). It is separated from the Lower Stonehouse area by a BLM/private road and a small amount of private land. The road is maintained by BLM and private landowners on an as-needed basis and is used by BLM personnel, landowners and recreationists for access to the northern portion of Steens Mountain.

The WSA is located within ODFW's Steens Mountain Wildlife Management Unit which contains 1,916-square-miles of land. The WSA supports a summer population of an estimated 300 deer and 20 antelope and a winter population of 150 deer and 30 antelope. ODFW has not set management objectives for antelope, but has an objective of 11,000 deer for the

Steens Mountain Wildlife Management Unit. The proposed action does not conform with ODFW's objectives for deer and nongame species to the degree that deer winter range would be affected by a proposed sagebrush control project.

The goal for nongame wildlife is to maintain populations of naturally-occurring species at self-sustaining levels.

The ODFW conducts an aerial census twice a year on the area's deer and antelope populations. For comparison, a census is also taken via horseback in the study area.

The U.S. Department of Agriculture conducts a predator-control program to reduce predation of livestock by aerial shooting of coyotes.

Harney County has not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study and EIS planning, scoping and public review process. These issues concern both the effects of wilderness designation on existing and potential land uses or resources in the WSA, as well as the effects of existing and potential land uses or resources on wilderness values. Land uses or resources raised as issues specifically for this WSA include:

- impact on area's wilderness values, and
- impact on proposed range improvements.

No other issues specific to this WSA were raised by the BLM or the public.

2. Description of the Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made.

The following alternatives are analyzed:

- all wilderness
- partial wilderness
- no wilderness/no action (proposed action)

An enhanced wilderness alternative recommending closure of the northern boundary road and combining the Lower Stonehouse WSA with the Stonehouse WSA is not analyzed because of the importance of the boundary road. The Stonehouse road provides the primary access from the eastern side of the mountain to the upper elevations of the northern portion of Steens Mountain. In addition to the use it receives from ranchers and BLM personnel, the road is heavily used by deer hunters in the fall.

An enhanced wilderness alternative which recommends acquisition of the private inholdings or any of the adjacent land is not analyzed because it would not be substantially different from the partial alternative.

All Wilderness

The all wilderness alternative would recommend all 8,090 acres of the public land in the Lower Stonehouse WSA suitable for wilderness (see Map 2). For purposes of analysis, it is assumed that the private inholdings and the mineral estate of the adjacent split-estate lands would not be acquired.

Energy and Mineral Development Actions

Wilderness designation would close 8,090 acres of public land within the WSA to all forms of appropriation under the mining and mineral-leasing laws. Mineral or energy exploration and development could occur on 160 acres of private land within the boundary of the designated wilderness; however, none is projected. There is no supporting geologic evidence such as known petroleum or geothermal bearing formations. The subsurface is not conducive to the formation of hydrocarbons. A thick volcanic cover blankets the surface and there are no known developable mineral deposits and no existing mineral leases or mining claims as of October 16, 1987.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

Livestock Management Action

Livestock grazing use would remain at the current estimated level of approximately 530 AUMs within portions of the Alvord, Mann Lake and Pollock allotments. The seasons of use and distribution of AUMs are as shown in Table 4.

Vehicle use for livestock management on 1.75 miles of ways would be precluded. Management of livestock and inspection and maintenance of 1.25 miles of fence would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years to maintain three reservoirs.

Recreation Management Actions

The entire 8,090 acres would be closed to motorized vehicle use including the 1.75 miles of ways. Current recreational use is estimated to be 100 visitor days per year. Most of the current use utilizes vehicles for access into the area via existing ways.

Partial

The partial alternative would recommend 7,375 acres of public land in the WSA suitable for wilderness designation (see Map 3). Under this alternative, an attempt would be made to acquire the mineral estate on the 250 acres of public land (split-estate). Also, an attempt would be made to acquire the 360 acres of private land in four parcels (one inholding and three adjacent parcels). Total acreage added to the NWPS would then be 7,735 acres, assuming acquisition of 360 acres of private land.

The boundary would be adjusted on all sides of the study area. In the north, the boundary would be moved to the northern boundary road. The adjustment on the west would pull the boundary westward away from the edge of the ridgeline where visitor use (and management problems) would be likely to occur. On the south, the boundary would be located along a ridgeline instead of along a legal subdivision, improving boundary identification. On the southeastern side of the WSA, the boundary would be adjusted to follow the 4,600-foot elevation level to avoid potential management problems.

Energy and Mineral Development Actions

Wilderness designation would close 7,125 acres of public land within the WSA to all forms of appropriation under the mining and mineral leasing laws. If acquisition is successful, another 250 acres of split-estate land and 360 acres private lands would also be closed to mineral entry for a total of 7,735 acres.

Due to the lack of supporting geologic evidence, a subsurface not conducive to the formation of hydrocarbons, no known developable deposits, a thick volcanic flow blanketing the area, and no energy or mineral claims or leases in the area, no energy or mineral exploration or development is projected, regardless of wilderness designation.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

Livestock Management Actions

Livestock use would remain at the current estimated level of approximately 530 AUMs within portions of the Alvord, Mann Lake and Pollock allotments. The seasons of use and distribution of AUMs is as shown in Table 4. No new range improvements would be developed in the area recommended suitable.

Vehicle use for livestock management on 0.25 miles of ways would be precluded. Management of livestock and maintenance of 1.25 miles of fence would be conducted on horseback. Mechanized heavy equipment would be used on the average of once every 10 years to maintain three reservoirs. Sagebrush would be controlled over 780 acres of old crested wheatgrass seeding in the area recommended as nonsuitable.

Recreation Management Actions

Assuming acquisition of the private inholding and mineral estate, the entire 7,735 acres would be closed to vehicle use, involving 0.25 miles of ways.

Current recreational use is estimated to be 100 visitor days per year. Most of the current use utilizes vehicles for access into the area via existing roads and ways.

No Wilderness/No Action (Proposed Action)

The no wilderness/no action alternative would recommend the entire WSA nonsuitable as wilderness. It represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

All of the 8,090 acres in the WSA would be open to mineral and energy exploration and development.

Due to the lack of supporting geologic evidence, a subsurface not conducive to the formation of hydrocarbons, no known developable deposits, a thick volcanic flow blanketing the area, and no energy or mineral claims or leases in the area, no energy or mineral exploration or development is projected.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

Livestock Management Actions

Livestock use would remain at the current estimated use level of approximately 530 AUMs within portions of three allotments in the WSA. The seasons of use and distribution of AUMs are shown in Table 4. Sagebrush would be controlled on 780 acres of an old crested wheatgrass seeding, and 2 miles of fence would be constructed.

Vehicle use for livestock management and maintenance of 3.25 miles of fence and three reservoirs would continue on 1.75 miles of ways. The ways would be used 10 times per year to check on livestock, maintain facilities and spread salt. Mechanized heavy equipment would be used on the average of once every 10 years to maintain the three reservoirs.

Recreation Management Actions

Vehicle use would continue on the existing roads and ways.

Current recreational use is estimated to be 100 visitor days per year. Vehicles are the primary means to gain access for recreational pursuits in the WSA.

Summary

Table 1 summarizes the projected management actions under each alternative. Table 2 summarizes the environmental consequences of each alternative

3. Affected Environment

This section discusses only those activities or resources which influence the character of the study area, or that may be affected by the alternatives.

Wilderness Values

Naturalness

The eastern escarpment and the high plateau on the western side of the WSA provide an area with a high degree of naturalness. About 1.5 miles of the eastern boundary is a county road, the major travel route from Fields to Folly Farm. It can be seen from the upper elevations, but is approximately 2 miles from vantage points along the rim. Ranching developments can also be seen from the high elevations within the WSA, but are miles away and are part of the vista background.

Lower Stonehouse WSA is in a relatively natural condition. The WSA contains seven unnatural features: three reservoirs, a fence 1.25 miles long, two ways totaling 1.75 miles, and an old 780-acre crested wheatgrass seeding. These unnatural features influence about four percent of the study area.

Two of the reservoirs, near the western boundary road, are small, are difficult to detect and have no vehicular access. The third reservoir lies in the northwest corner at the head of a drainage and is substantially unnoticeable due to the topography and trees in the vicinity.

The fence runs from the eastern boundary, due west, up the lower east slopes of the Steens face and is relatively unnoticeable. The vehicle way closely parallels the southeast boundary road and is generally unnoticeable.

The seeding is in the southeast corner of the study area and is barely visible. It was seeded in 1965 as a result of a burn. The lower slopes were seeded by a drill and the upper slopes were aerially seeded. The average visitor is not likely to notice the seeding from a distance because sagebrush and other species are growing in it. Once inside the seeding, the drill rows are more discernable, but not enough to appear obviously unnatural.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

Opportunities for solitude are outstanding. Both topography and vegetation provide screening, but the area would support only a limited number of users. On the whole, about two-thirds of the area has sufficient topographic screening to enhance a visitor's opportunity for solitude. The ridge that makes up most of the study area would screen visitors on one side from those on the other.

Areas with the greatest potential for solitude are in the drainages of the east-facing escarpment, as well as a few places on the top of the ridge where shallow drainages and small hills provide enough screening for a small number of visitors. Other portions of the WSA, on top of the ridge and in the southeast corner, provide insufficient topographic screening to enhance solitude.

Juniper stands on the east face and the northwest ridgetop offer vegetative screening. Juniper also grows in the shallow drainages and wet areas on the western slope. A few aspen groves grow in wet areas in the northwest corner of the study area. This screening enhances solitude in the WSA.

The study area has outstanding opportunities for primitive recreation, but they are somewhat limited by the size and topography of the WSA. Hunting, day hiking, backpacking, camping and sightseeing have the best primitive recreation potential.

The opportunities for day hiking are limited. The longest hike on the rim, from end to end in the study area, would be 5 miles. Hikers would be drawn to the top of the ridge where the views are expansive; however, this hike would cross private land.

Backpacking and camping opportunities are similar to those of hiking. Camping spots are not abundant, but areas are available. Water is available on top of the ridge and on the lower east slopes. There are two springs and several intermittent streams on the east slopes.

Game species which can be hunted in the area include upland game birds, mule deer and antelope. The opportunities are best for hunting deer and chukar. Although these types of hunting opportunities are outstanding, deer hunting is somewhat limited by the size and configuration of the WSA.

Opportunities for sightseeing are best on the top of the ridge, which offers views for many miles in all directions, including other portions of Steens Mountain and the Alvord Desert to the south and the Sheepshead Mountain area to the east. The most attractive feature within the study area itself is the impressive east-facing escarpment.

Special Features

Several features in the WSA which add to the value of the area as wilderness include scenic quality, and botanical and wildlife values.

The east-facing escarpment is highly scenic and combines a variety of landforms, color, and vegetation. It is one of a series of steep fault scarps which form the basin and range topography of much of southeastern Oregon.

Lupinus biddlei, a plant that is a candidate for Federal listing as threatened or endangered, occurs at the lower elevations (see Map 5). Sage grouse, also a candidate for Federal listing as threatened or endangered, are found at upper elevations.

Wildlife values are special features in this WSA because the lower slopes of the east side are crucial winter range for mule deer. Deer are dependent on the forage and cover in the area.

Diversity in the National Wilderness Preservation System (NWPS)

Lower Stonehouse WSA falls within the Intermountain Sagebrush Province, according to the Bailey-Kuchler system for classifying ecosystems. The potential natural vegetation of most of the area is sagebrush-steppe with small meadows in the sagebrush ecosystem.

The WSA contains six ecosystems listed in the Basin and Range section of the Oregon Natural Heritage Plan. These are big sagebrush/bluebunch wheatgrass at the lower elevations and western juniper/bluebunch wheatgrass on the steep slopes. At the higher elevations, the ecosystems are big sagebrush/Idaho fescue, low sagebrush/Idaho fescue, aspen groves, and a snowbrush and bittercherry community complex.

The study area is within five hours' driving time of one standard metropolitan statistical area with population over 100,000: Boise, Idaho.

Energy and Mineral Development

The geology, energy and mineral resources of the Lower Stonehouse WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, correlating rock units in the WSA with similar environments in areas known to contain mineral resources and by evaluating a geochemical sampling program conducted by BLM. Technical details of the evaluation are in a mineral resources assessment report, "Sheepshead Mountain Geologic Resource Area (GRA), Harney County Oregon," prepared by TERRADATA (a consulting firm under contract with BLM) and in a BLM report on the Fields GRA.

The WSA is within the South Harney GRA which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level). A description of the rating system is provided in the Statewide EIS volume.

Table 3 shows the energy and mineral classifications in the study area. Map 4 shows where energy and mineral resources have moderate or high potential for occurrence in the WSA.

The surface rocks of the WSA are composed mainly of Steens basalt which consists of numerous thin flows of olivine basalt and rare interlayers of tuffs, with a cumulative thickness of several thousand feet. Locally, the area is overlain with semiconsolidated lacustrine (lake) tuffaceous sediments, ash flow tuffs and sedimentary rocks.

Energy Resources

Based upon indirect evidence, the entire WSA is considered to have low or no potential for the occurrence of energy resources, including oil and gas and geothermal resources.

As of October 16, 1987, there were no geothermal or oil and gas leases within the WSA.

Mineral Resources

The southeastern portion of the WSA has moderate favorability for the occurrence of diatomite. The environment necessary for the accumulation of diatomite is found in the WSA's tuffaceous lake sediments. These sediments are similar to those found in other Tertiary basins in southeastern Oregon that are known to contain diatomite. Therefore, the environment for diatomite is present; however, data and direct evidence of diatomite to support development are lacking. (i.e. diatoms do occur in the lake sediment but sufficient concentrations of diatomite have not been recorded.)

As of October 16, 1987, there were no recorded mining claims in the WSA.

Vegetation

The most extensive plant community in this WSA is western juniper and bluebunch wheatgrass. It occurs primarily on the steep, east-facing slope of Steens Mountain and in Stonehouse Creek Canyon. Some of the common associated species include big sagebrush, mountain mahogany, snowberry, serviceberry, snowbrush, bittercherry and some dense stands of aspen. Common grass species are bluebunch wheatgrass, Sandberg's bluegrass and Thurber's needlegrass. The ecological status is estimated to be late seral. The major potential natural community species is bluebunch wheatgrass. Juniper and big sagebrush are also present in the potential natural community in small amounts.

Low sagebrush dominates a small community on the flat, rocky ridgetops at around 7,000 feet elevation. The estimated ecological status of this community is late seral and the potential natural community is Idaho fescue, Sandberg's bluegrass and low sagebrush.

A community dominated by big sagebrush occurs extensively on the plateaus at around 7,000 feet elevation where the soil is deep. The ecological status is estimated to be mid-seral, and the major species in the potential natural community is Idaho fescue, western needlegrass and big sagebrush.

Wet meadows and aspen groves are intermingled with the big sagebrush community. The vegetation in the meadows is bluegrasses, sedges and forbs. The aspen groves have a limited understory of bluegrasses, mountain brome and shade-tolerant forbs. The estimated ecological status of both areas is mid-seral. The potential natural community on the meadows is bluegrass and sedges, and in the aspen groves is aspen and the associated shrubs.

Riparian habitat occurs along 3 mile of stream. The riparian vegetation is mid-seral. The dominant riparian species are dogwood, chokecherry, willow, aspen and rose.

Wildlife

This WSA contains a wide variety of wildlife species due to the diversity of habitat types. Wildlife species range from those using low elevation big sagebrush to those using aspens. Cliffs, rimrock and the narrow riparian zones along the streams offer additional special habitat types. Water is well distributed.

Mule deer summer at the upper elevations on Steens Mountain and winter on lower elevations within and outside the WSA. Antelope winter along the lower slopes of Steens Mountain. Rocky Mountain elk occasionally use the top of Steens Mountain during the summer and fall.

Nongame wildlife species include coyote, mountain cottontail, common flicker, Say's phoebe and western meadowlark. Species common to the upper elevations are Belding's ground squirrel, northern pocket gopher and common flicker. Golden eagles, American kestrel, prairie falcon and great horned owls are common raptors.

Steep slopes on the east side of Steens Mountain have excellent chukar populations. Sage grouse are abundant on top of the mountain where big sagebrush and low sagebrush cover occur. Sage grouse winter out of the WSA.

Riparian areas provide habitat for additional species including yellow warbler, willow flycatcher, rufous-sided towhee, dipper and wandering garter snake.

Watershed

The WSA contains about 3 miles of perennial streams, made up of Stonehouse Creek, Little Stonehouse Creek and Summit Creek. Portions of Stonehouse Creek have streambank erosion caused by livestock use and high flows.

Livestock Grazing

Portions of three grazing allotments (Alvord, Mann Lake, Pollock) are within the WSA. Currently all public lands in the WSA are permitted for livestock grazing. Current estimated livestock use and the season of use for each allotment are shown in Table 4.

Existing range improvements in the WSA are 1.25 miles of fence, three reservoirs and an old 780-acre crested wheatgrass seeding. The crested wheatgrass seeding is heavily invaded by big sagebrush causing a decrease in livestock forage.

Livestock operators use motor vehicles on the ways approximately 10 times per year for each fence and reservoir inspection and maintenance, to check livestock and to spread salt.

Recreation Use

Existing recreation use in the Lower Stonehouse WSA is primarily vehicle-oriented hunting. Mule deer and upland game birds are the most commonly hunted game species. Visitor use for deer hunting and chukar hunting is moderate. Deer hunting occurs throughout the study area but primarily in the upper elevations. Chukar hunting is mostly confined to the lower slopes and drainages on the eastern side of the WSA.

Antelope hunting occurs to a limited extent in the study area. This is primarily due to the low numbers of antelope found in the area.

At this time, the WSA receives little primitive recreation use not associated with hunting. Activities such as day hiking, backpacking, or general sightseeing and wildlife viewing account for a small amount of use. Current recreation use is estimated to be 100 visitor days per year.

Local Personal Income

Livestock use at the current level of 530 AUMs and recreation use totaling 100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $6,360 for livestock grazing and $1,200 related to recreation use of the WSA, for an overall total of $7,560. The Statewide EIS volume discusses the term local personal income and how income figures have been derived.

4. Environmental Consequences

Introduction

This section discusses the environmental consequences of implementing each of the alternatives. Resources and activities not significantly affected by any of the alternatives are not discussed. The Statewide volume discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness: 8,090
Recommended nonsuitable for wilderness: 0

Impacts on Wilderness Values

All of the WSA would be designated wilderness and wilderness values within the entire 8,090 acres of public land would be protected by legislative mandate. Wilderness values of naturalness, solitude, and primitive and unconfined recreation would be preserved. Special features including scenic values, the plant *Lupinus biddlei* and sage grouse, candidates for Federal listing as threatened or endangered, and the crucial deer winter range on the lower eastern slopes would be protected. Wilderness designation would preserve the steep east-facing escarpment which is part of the Steens Mountain fault block, the highest and most scenic fault block mountain range in Oregon.

Naturalness

Naturalness would be enhanced by prohibiting motorized recreation use which would be 100 visitor days per year. The WSA has no roads and 1.75 miles of ways. The ways occur on the very edge of the WSA near the northwestern and eastern boundaries and have a low impact on naturalness. Closing the ways would improve the naturalness of the area by essentially eliminating the unnatural presence of vehicles and allowing the ways to revegetate and become less noticeable.

Reservoir maintenance would require heavy equipment access on 1.75 miles of ways approximately once every 10 years for each development. This infrequent amount of use would not prevent the ways from revegetating.

Solitude

Opportunities for solitude are excellent now and would improve slightly with the elimination of motorized recreation use. The ways are near the perimeter of the WSA and enter the area only a short distance. One way parallels a boundary road where vehicle use would continue. The other way is in a crested wheatgrass seeding which has no other development.

Maintenance of the existing three reservoirs would require the use of heavy equipment approximately once every 10 years for each facility. This maintenance activity would cause minor local impairment of solitude.

Primitive and Unconfined Recreation

Opportunities for primitive and unconfined recreation are excellent and would improve slightly with the closure of the area to motorized recreation use. Closure would also reduce the potential for unauthorized cross-country travel.

Special Features

The principal topographic feature that stands out in this area is the steep, east-facing escarpment of the Steens Mountain. This feature with its scenic and wildlife values would be protected by wilderness legislation. Elimination of motorized vehicle use in the WSA, the potential for inadvertent impacts to the deer winter range and the candidates for Federal listing as threatened or endangered *(Lupinus biddlei* and sage grouse) would be reduced.

Conclusion: Wilderness designation of the entire 8,090 acres within the Lower Stonehouse WSA would result in the protection of existing wilderness values with slight enhancement of these values.

Impacts to Energy and Mineral Development

This alternative would close 8,090 acres to all forms of mineral exploration and development. Mineral and/or energy development could occur on 160 acres of private lands within the boundaries of the designated wilderness.

Energy Development

Exploration for oil and gas and geothermal resources, which have a low potential for occurrence based upon indirect evidence, would be precluded on 8,090 acres. Exploration could occur on the 250 acres of split-estate lands and the 160-acre private inholding. Due to the lack of geologic evidence to justify an extensive exploration/development program, no exploration or development is expected.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for diatomite would be precluded on 8,090 acres. Exploration could occur on the 250-acre of split-estate lands and the 160-acre private inholding. However, due to a lack of geologic evidence to justify an extensive exploration-development program, no exploration or development is expected.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Areas designated wilderness would not be subject to the projected disturbing activities. Vegetation dependent upon existing undeveloped environments would thus be maintained.

The vegetation composition and the ecological status would not change over 7,310 acres. Big sagebrush would continue to increase in the 780 acres of crested wheatgrass seeding. *Lupinus biddlei,* a candidate for Federal listing as threatened or endangered, would be preserved.

Conclusion: Vegetation would be maintained over 7,310 acres. Sagebrush would continue to increase in the 780 acres of crested wheatgrass seeding. *Lupinus biddlei* would be preserved.

Impacts on Wildlife

Wildlife habitat for a summer population of 300 deer and 20 antelope and a winter population of 150 deer and 30 antelope would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives. Closing the 1.75 miles of ways would have almost no impact on wildlife due to the light vehicle use that occurs.

The increase of big sagebrush in the crested wheatgrass seeding would benefit wintering deer on the 400 acres used by them. The other 380 acres is along the county road and receives little deer use. Antelope habitat would be degraded over all 780 acres due to the increase in big sagebrush cover. Nongame species would benefit from the increased big sagebrush cover. Sage grouse would not be affected.

Conclusion: Wildlife habitat and populations would be maintained on 8,090 acres designated wilderness. Increased big sagebrush cover on the 780-acre seeding would improve deer and nongame habitat while antelope habitat would deteriorate.

Impacts on Watershed

Current watershed conditions, including streambank erosion along 3 miles of stream due to livestock use and times of high water flows, would continue.

Conclusion: Watershed conditions would remain the same.

Impacts on Livestock Grazing

Livestock grazing use would remain at the current estimated level of approximately 530 AUMs within portions of the Alvord, Mann Lake and Pollock allotments. The seasons of use and distribution of AUMs are as shown in Table 4.

Construction of 2 miles of fence to improve livestock management would be precluded.

Vehicle use for livestock management on 1.75 miles of ways would be precluded. Annual inspection and maintenance of fences not accessible by open roads would be done on foot or by the use of riding and pack animals. This would result in some inconvenience and a slight additional expense to three livestock operators. Heavy equipment would be used on the average of once every 10 years to maintain three reservoirs.

Conclusion: Livestock grazing use would remain at 530 AUMs. Vehicle use on 1.75 miles of ways would be precluded resulting in some inconvenience and additional expense to livestock operators.

Impacts on Recreation

The entire 8,090 acres would be closed to motorized recreation use including1.75 miles of ways. The all wilderness alternative would only slightly affect current vehicle-oriented recreation which is primarily hunting for deer, antelope and chukar. The only access within the WSA, other than a 0.25-mile access way to a reservoir, is a 1.5-mile way closely paralleling a boundary road (main county road). Its closure would not affect hunters. However, cross-country travel restrictions would affect hunters who often drive across the flatter terrain in the higher elevations.

The trend in motorized recreation use can be expected to decline slightly from the present level. Vehicle-oriented recreation is expected to be displaced into other areas or be substituted by primitive recreation. Primitive recreation would be expected to increase slightly. Some vehicle-oriented recreationists, primarily hunters, may continue to use the WSA, traveling by foot or horseback rather than using vehicles. Projected use patterns indicate that the current level of 100 visitor days per year would not substantially change over time. Some will find other areas where vehicle use is permitted.

Conclusion: Recreation use would remain the same at the current level of 100 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 530 AUMs. Overall recreation use would remain at 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be no net change from the current level.

Conclusion: Annual local personal income generated from resource outputs in the WSA would remain at approximately $8,000.

Partial Wilderness

Recommended suitable for wilderness: 7,735 acres (assuming acquisition of 360 acres of private land and 250 acres of mineral estate)

Recommended nonsuitable for wilderness: 965 acres

Impacts on Wilderness Values

The partial wilderness alternative would add 7,735 acres to the NWPS, with acquisition of the 360 acres of private land and the acquisition of the mineral estate of 250 acres of split-estate lands. The effects of this alternative would be nearly the same as the all wilderness alternative; however, acquisition of the private land and mineral estate would prevent potential disturbance from mineral exploration or development on these parcels. This would improve the wilderness qualities of the area. Wilderness values of scenic values, naturalness, solitude and primitive and unconfined recreation would be preserved. Special features, including *Lupinus biddlei* (a candidate for Federal listing as threatened or endangered) and part of the crucial deer winter range on the lower eastern slopes would be in the area recommended as nonsuitable.

Wilderness values on the 965 acres recommended nonsuitable would not receive special legislative protection and would be subject to brush control and continued motorized recreation.

Naturalness

The high degree of naturalness on the eastern escarpment and the high plateau on the western side of the WSA would be enhanced by prohibiting motorized recreation use. This would allow revegetation of the 0.25 mile-long way which provides access to a reservoir in the northwestern corner of the WSA.

Closing the ways and thereby helping to eliminate cross-country vehicle use would improve the naturalness of the area by eliminating the unnatural presence of vehicles and allowing the ways to revegetate and become less noticeable.

The remaining 965 acres recommended nonsuitable would not receive wilderness protection. One way, 1.5 miles long, would remain open to vehicular access. The naturalness of this portion could also be adversely affected by the proposed 780-acre brush-control project. This project would disturb the present vegetation and change the present visual character of the area.

Solitude

Opportunities for solitude are excellent in the suitable portion and would improve slightly with the elimination of motorized recreation use. Periodic use of one way approximately 0.25 mile in length for maintenance and upkeep of a reservoir in the northwestern corner of the WSA, would cause short-term disturbance of solitude while motorized vehicles and equipment were at the site.

Within the remaining 965 acres not recommended suitable for wilderness, the other 1.5 miles of way would remain open. It is within 0.1 mile or less of the county road, and motorized vehicle use on this way would have a negligible impact on solitude.

Primitive and Unconfined Recreation

The opportunities for primitive and unconfined recreation activities are excellent in the suitable portion and would improve slightly with the closure of the area to motorized recreation use. As noted in the all wilderness alternative, the quality of primitive recreation would improve slightly with the closure of the one way and elimination of cross-country travel. No change in primitive and unconfined recreation use is projected in the suitable area.

No change in primitive and unconfined recreation use is projected in the 965 acres recommended nonsuitable.

Special Features

The principal topographic feature is the steep, east-facing escarpment of the Steens Mountain. This feature with its scenic, botanic and wildlife values would be protected from impacts by eliminating motorized vehicle use in the suitable portion. The potential for inadvertent impacts to most of the crucial deer winter range would be reduced.

The 965 acres recommended nonsuitable contain a few wilderness values and the several special features. Those special features include some deer winter range and the presence of *Lupinus biddlei,* a candidate for Federal listing as threatened or endangered. The proposed brush-control project would be in the nonsuitable portion which is located in the lower foothills. Scenic values and vegetation could be affected by this project by reducing vegetative diversity through elimination of brush which would allow grass species to increase in density. Sage grouse, a candidate for Federal listing as threatened or endangered Species, would not be affected.

Conclusion: Wilderness designation of 7,735 acres (assuming acquisition of 360 acres of private land and 250 acres of mineral estate) would result in the protection of most existing wilderness values and enhancement of those values. Crucial deer winter range would be impacted on 400 acres by brush control. Further declines from other potential uses could occur in the long term on 965 acres.

Impacts on Energy and Mineral Development

Under the partial wilderness alternative, 7,735 acres of public land would be closed to mineral exploration and development if the 360-acre of private private parcel and the mineral estate of the 250 acres of split-estate lands are acquired.

Energy Development

Exploration for oil and gas and geothermal resources, which have a low potential for occurrence based upon indirect evidence, would be precluded on 7,735 acres, assuming acquisition of the 360-acre private inholding and the mineral estate of the 250 acres of split-estate lands. However, due to the lack of geologic evidence to justify an extensive exploration/development program, no exploration or development,is expected.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for diatomite would be precluded on 7,735 acres, assuming acquisition of the 360-acre private inholding and the mineral estate of the 250 acres of split-estate lands. However, due to the lack of geologic evidence to justify an extensive exploration/development program, no exploration or development is expected.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Native vegetation would be preserved in the suitable portion of the WSA.

The vegetation composition in the area recommended suitable would not change over 7,735 acres (assuming acquisition of 360 acres of private land and 250 acres of split-estate land). Sagebrush treatment in the area recommended nonsuitable would markedly reduce the density of big sagebrush over 780 acres allowing an increase in grass. *Lupinus biddlei,* a candidate for Federal listing as a threatened or endangered species, would not be affected. This species would be avoided in the proposed sagebrush-control area.

Conclusion: Vegetation in areas designated wilderness would be maintained. Big sagebrush would be treated on 780 acres decreasing big sagebrush and allowing an increase in grass. *Lupinus biddlei* would not be affected.

Impacts on Wildlife

Wildlife habitat for a summer population of 300 deer and 20 antelope and for sage grouse would be maintained under the partial wilderness alternative. The lands acquired, containing deer summer and winter range and chukar habitat and 1 mile of riparian habitat, would be preserved under wilderness designation. Projected range improvement (sagebrush control), in the nonsuitable area, would decrease deer winter range quality over 400 acres. Antelope habitat would improve on the projected 780 acres of sagebrush control. Populations of most nongame species would decline due to sagebrush control on 780 acres. Sage grouse do not use the area proposed for sagebrush control and would not be affected.

Conclusion: Wildlife habitat and populations would be maintained on 7,735 acres designated wilderness. Projected sagebrush control to improve livestock forage would decrease deer winter range quality. Antelope habitat would improve due to sagebrush control. Sage grouse would not be affected.

Impacts on Watershed

Existing watershed conditions, including streambank erosion, would continue due to livestock use and times of high water flows. Acquisition of private property would add 1 mile of perennial stream to public land in the WSA.

Conclusion: Watershed conditions would not change. Land acquisition would add 1 mile of perennial stream to public lands.

Impacts on Livestock Grazing

Livestock grazing use would remain at the current estimated level of approximately 530 AUMs within portions of the Alvord, Mann Lake and Pollock allotments. The seasons of use and distribution of AUMs are as shown in Table 4.

Construction of 2 miles of fence to improve livestock management would be precluded in the area recommended suitable. Sagebrush would be treated over 780 acres of old crested wheatgrass seeding to increase livestock forage in the nonsuitable area, but livestock use would not increase.

Vehicle use for livestock management on 0.25 mile of ways would be precluded. Annual inspection and maintenance of fences not accessible by open roads would be done on foot or by the use of riding and pack animals. This would result in some inconvenience and a slight additional expense to three livestock operators. Heavy equipment could be used an average of once every 10 years to maintain three existing reservoirs.

Conclusion: Livestock grazing use would be 530 AUMs. Vehicle use on 0.25 mile of ways would be precluded resulting in some inconvenience and additional expense to livestock operators. The 780 acres of sagebrush in an old crested wheatgrass seeding in the nonsuitable area would be treated to remove sagebrush. This would result in an increase in livestock forage, but livestock use would not increase.

Impacts on Recreation Use

Motorized vehicle use would be precluded on 7,735 acres, including 0.25 miles of ways, assuming acquisition of 360 acres of private property and 250 acres of mineral estate. This closure would eliminate all motorized vehicle use in the suitable area. Some vehicle-oriented recreationists (primarily hunters) may continue to use the WSA, traveling by foot or horseback. Others will find different areas where vehicle use is permitted.

The partial alternative would protect recreation values associated with the higher elevation portion of the WSA. Opportunities for hunting, day hiking, backpacking, camping and sightseeing are outstanding within this part of the study area, and wilderness designation would preserve these opportunities.

The 965 acres recommended nonsuitable would continue to be available for motorized vehicle use on 1.5 miles of ways. A 780-acre brush-control project is proposed in an old crested wheatgrass seeding within this area. Hunting would be limited, except possibly for antelope, as cover and vegetative diversity would be eliminated for a number of years until sagebrush and other plant species became reestablished. Primitive recreation would also be subject to disturbance from vehicle-oriented recreation and development of the land for livestock grazing on 965 acres. The effect of this alternative would be a slight decrease in the level of vehicle-oriented recreation, primarily hunting and a slight increase in primitive recreation. Projected use patterns indicate that the current level of 100 visitor days per year would not substantially change over time.

Conclusion: Recreation use would remain the same at the current level of 100 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 530 AUMs. Overall recreation use would remain at 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be no net change from the current level.

Conclusion: Annual local personal income generated from resource outputs in the WSA would remain at approximately $8,000.

No Wilderness/No Action (Proposed Action)

Recommended suitable for wilderness: 0 acres
Recommended nonsuitable for wilderness: 8,090 acres

Impacts on Wilderness Values

Under the no wilderness alternative, the entire 8,090 acres would not be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation and the area's special features, including 400 acres of crucial deer winter range would be subject to the effects of projected management actions. *Lupinus biddlei* and sage grouse, candidates for Federal listing under the Endangered Species Act, would not be impacted.

Naturalness

Continued motorized recreation use would locally reduce naturalness in the high plateau area.

The natural character of the WSA could be adversely affected by the proposed 780-acre brush-control project.

Solitude

Continued periodic use of ways for maintenance and upkeep of resource developments would maintain short-term localized disturbance of solitude when motorized vehicles and equipment were in specific locales.

Primitive and Unconfined Recreation

Primitive recreation would continue to be subject to disturbance by existing vehicle access routes and use. Primitive recreation activities would be further impaired by proposed brush control and fencing. No change in the area's primitive and unconfined recreation visitor days is projected.

Special Features

The area's special wilderness features would not be protected from adverse impacts of development. Sagebrush control on 780 acres on the lower east slope would temporarily reduce scenic values and vegetative diversity by reducing brush and allowing grass species to increase in density, thus changing the vegetative composition. Deer winter range would be reduced on 400 acres. *Lupinus biddlei* and sage grouse would not be impacted. Lupinus biddlei could be avoided by sagebrush control and sage grouse do not use that cover. Fence construction would impact scenic values over about 320 acres.

Continued motorized vehicle use would slightly increase the potential for inadvertent disturbance to deer winter and summer range, unique plant communities, and plant and animal species of special interest. Monitoring and mitigation measures could minimize some of the impacts.

Conclusion: In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 1,100 acres of the WSA, with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

The entire 8,090 acre WSA would remain open to mineral entry.

Energy Development

No exploration for oil and gas and geothermal resources is expected. An extensive exploration/ development program is not anticipated due to a lack of sufficient geologic evidence to support it.

Conclusion: No impact to energy development is expected.

Mineral Development

No exploration for diatomite is expected. A major exploration/development program is not anticipated due to a lack of sufficient geologic evidence to support it.

Conclusion: There would be no impact to mineral development.

Impacts on Vegetation

A rest-rotation grazing system would be implemented for that portion of the WSA above the rim, about 1,900 acres. The present mid-seral vegetation would change to late seral vegetation within 20 years due to improved livestock management. No change in vegetation would occur on the steep slopes. Sodgrass vigor and density along riparian areas would improve over a small area.

Sagebrush control would markedly reduce the density of big sagebrush over 780 acres allowing an increase in grass. *Lupinus biddlei,* a candidate for Federal listing as a threatened and endangered species would not be affected. This species would be avoided in the proposed sagebrush -ontrol area.

Conclusion: Vegetation would change from mid-seral to late seral over 1,900 acres and over a small riparian area due to improved grazing management. Sagebrush control over 780 acres would increase grass. *Lupinus biddlei* would not be affected.

Impacts on Wildlife

Wildlife habitat for a summer population of 300 deer and 20 antelope and for sage grouse would be maintained under the no wilderness alternative. A projected range improvement (sagebrush control) would decrease deer winter range quality over 400 acres. Antelope habitat would improve on the projected 780 acres of sagebrush control. Populations of most nongame species would decline due to sagebrush control on 780 acres. Sage grouse do not use the area proposed for sagebrush control and would not be affected.

Conclusion: Habitat for most species would be maintained. Projected sagebrush control to improve livestock forage would decrease deer winter range quality. Antelope habitat would improve due to sagebrush control. Sage grouse would not be affected.

Impacts on Watershed

A fence construction project, which has been proposed to improve and control livestock grazing on perennial streams and meadows, would help stabilize eroding streambanks and improve water quality.

Conclusion: Streambank erosion would be reduced and water quality improved.

Impacts on Livestock Grazing

Livestock grazing use would be sustained at the current level of approximately 530 AUMs within the Alvord, Mann Lake and Pollock allotments in the WSA. The season of use and distribution of AUMs would remain as shown in Table 4.

Vehicle use for livestock management and facility inspection and maintenance would continue on the 1.75 miles of ways. Two miles of fence would be constructed to improve livestock management over 1,900 acres. Sagebrush control would increase forage over 780 acres. This increased forage would be used to relieve grazing pressure on other areas within and outside the WSA, thus improving grazing distribution.

Conclusion: Livestock grazing use would remain at 530 AUMs. All range improvements would be constructed including 2 miles of fence and 780 acres of sagebrush control. Vehicle use would continue on all ways and roads.

Impacts on Recreation Use

Primitive recreation such as hunting, day hiking, backpacking and camping would be subject to disturbance from other land uses such as continued vehicle use. Motorized recreation use would continue. Overall, the area's recreation use would continue to be low. Projected use patterns indicate that the current level of 100 visitor days per year would not substantially change over time.

Conclusion: Recreation use would remain the same at the current level of 100 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 530 AUMs. Overall recreation use would remain at 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be no net change from the current level.

Conclusion: Annual local personal income generated from resource outputs in the WSA would remain at approximately $8,000.

Unavoidable Adverse Impacts of the Proposed Action

Under the Proposed Action (No Wilderness/No Action) construction of 2 miles of fence and a brush-control project disturbing 780 surface acres would have an unavoidable adverse impact to wilderness values. Overall, approximately 1,100 acres would visually be affected.

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity

Under the Proposed Action, all short-term uses would continue. Future land use options including range improvement projects would remain open. Long-term ability of the area to produce wilderness values would be directly lost on 781 acres of the WSA due to fencing and brush control projects and continued use of motorized vehicles. Overall, approximately 1,100 acres would visually be affected.

Irreversible and Irretrievable Commitment of Resources

Under the Proposed Action of no wilderness, range improvements (2 miles of fence and 780 acres of brush control) would result in an irreversible commitment of wilderness values on 781 acres directly and 1,100 acres directly and indirectly.

5. Wilderness Manageability and Rationale for the Proposed Action

Manageability of the Area as Wilderness

The area would be manageable as wilderness under both the all wilderness and partial alternatives. However, the area's relatively small size and its configuration could cause manageability problems. The study area is primarily a very steep ridge with only a small amount of land on either side available for wilderness users. In addition, portions of the study area are bounded by parcels of private land on all sides. This boundary is not readily identifiable and in places, particularly along the western side, it cuts into the WSA far enough to preclude easy access along the top of the ridgeline.

Under the partial alternative, the manageability of the area would be improved with the addition of a 160-acre inholding and private and split-estate lands on the boundary. This would improve access along the ridgeline. However, management problems could still occur on the east and west as a result of poorly-defined boundaries with adjacent private land. These problems could be reduced with signing or fencing.

Rationale for Selection of the Proposed Action

The No Wilderness/No Action alternative is the Proposed Action to allow for projected range developments, improved watershed quality, mineral exploration and continued access by motor vehicles.

This alternative is also preferred because of the potential manageability problems associated with wilderness designation. Limited usable acreage would be available for wilderness-related recreational activities due to the steep slopes located primarily in the eastern portion of the WSA and also the narrow width of the remaining usable WSA area.

6. Summary and Analysis of Public Comments

Comments were received both in writing and oral testimony at public hearings during the comment periods for the 1985 Draft EIS and 1987 Supplement to the Draft EIS. None of the comments concerned adequacy of the analysis for this appendix. Comments concerning BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning Statewide issues and analyses are addressed in the Statewide volume.

A specific comment for this WSA follows.

Comment: Eliminate the northern boundary and combine WSA 2-23L, Stonehouse, and 23-23M, Lower Stonehouse, as an enhanced alternative.
Response: As stated under the Description of the Alternatives section, Chapter 2, this alternative was not analyzed because the road provides primary access to the upper elevations of the northern end of Steens Mountain via the east side of the mountain.

Table 1. Summary of Proposed Management Under Each Alternative, Lower Stonehouse WSA (OR-2-23M)

Proposed Management	All Wilderness	Partial	No Wilderness/ No Action
Acres Designated as Wilderness	8,090	7,325	0
Acres Closed to OHVs by Wilderness Designation	8,090	7,325	0
Miles of Ways Closed	1.75	0.25	0
Acres of Full Fee Estate Acquired [1]	0	360	0
Acres of Split-Estate Acquired [2]	0	250	0
Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation	8,090	7,125	0
Structural Livestock Projects Developed: Fences (miles)	0	0	2
Vegetative Manipulation for Livestock: Brush Control without Seeding (acres)	0	780	780

[1] Upon acquisition, these additional lands would be incorporated into the wilderness area, closed to vehicle use, and withdrawn from mineral location and leasing.
[2] Upon acquisition of mineral estate, these lands would be withdrawn from mineral location and leasing.

Table 2. Summary of Environmental Consequences of Alternatives, Lower Stonehouse WSA (OR-2-23M)

Resource or Activity	All Wilderness	Partial Wilderness	No Wilderness/No Action
Wilderness Values	Wilderness designation of the entire 8,090 acres within the Lower Stonehouse WSA would result in the protection of existing wilderness values with slight enhancement of these values.	Wilderness designation of 7,735 acres (assuming acquisition of 360 acres of private land) would result in the protection of most existing wilderness values and enhancement of those values. Crucial deer winter range would be impacted on 400 acres of brush control. Further declines from other potential uses in the non-suitable portions of the WSA could occur in the long term on 965 acres.	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 1,100 acres, with further declines from other potential uses over the long term.
Energy and Mineral Development	No impact to energy or mineral development is expected.	No impact to energy or mineral development is expected.	No impact to energy or mineral development is expected.
Vegetation	Vegetation would be maintained over 7,3l0 acres. Sagebrush would continue to increase in the 780 crested wheatgrass seeding. *Lupinus biddlei* would be preserved.	Vegetation in areas designated wilderness would be maintained. Big sagebrush would be treated on 780 acres decreasing big sagebrush and allowing an increase in grass. *Lupinus biddlei* would not be affected.	Vegetation would change from mid-seral to late seral over l,900 acres and over a small riparian area due to improved grazing management. Sagebrush control over 780 acres would increase grass. *Lupinus biddlei* would not be affected.
Wildlife	Wildlife habitat and populations would be maintained on 8,090 acres designated wilderness. Increased big sagebrush cover on the 780-acre seeding would improve deer and nongame habitat while antelope habitat would deteriorate.	Wildlife habitat and populations would be maintained on 7,735 acres designated wilderness. Projected sagebrush control to improve livestock forage would decrease deer winter range quality. Antelope habitat would improve due to sagebrush control. Sage grouse would not be affected.	Habitat for most species would be maintained. Projected sagebrush control to improve livestock forage would decrease deer winter range quality. Antelope habitat would improve due to sagebrush control. Sage grouse would not be affected.
Watershed	Watershed conditions would remain the same.	Watershed conditions would not change. Land acquisition would add l mile of perennial stream to public lands.	Streambank erosion would be reduced and water quality improved.
Livestock Grazing	Livestock grazing use would remain at 530 AUMs. Vehicle use on 1.75 miles of ways would be precluded resulting in some inconvenience and additional expense to livestock operators.	Livestock grazing use would be 530 AUMs. Vehicle use on 0.25 mile of ways would be precluded resulting in some inconvenience and additional expense to livestock operators. The 780 acres of sagebrush in an old crested wheatgrass seeding would be treated to remove sagebrush. This would result in an increase in livestock forage, but livestock use would not increase.	Livestock grazing use would remain at 530 AUMs. All range improvements would be constructed including 2 miles of fence and 780 acres of sagebrush control. Vehicle use would continue on all ways and roads.
Recreation Use	Recreation use would remain the same at the current level of 100 visitor days per year.	Recreation use would remain the same at the current level of 100 visitor days per year.	Recreation use would remain the same at the current level of 100 visitor days per year.
Local Personal Income	Annual local personal income would remain at approximately $8,000.	Annual local personal income would remain at approximately $8,000.	Annual local personal income would remain at approximately $8,000.

Table 3. Classification of Energy and Mineral Potential, Lower Stonehouse WSA (OR-2-23M)

Commodity	Area	Level of Potential	Level of Certainty
Metals (mercury)	Entire WSA	L	B
Geothermal	Entire WSA	O	B
Uranium/Thorium	Entire WSA	O	A
Coal	Entire WSA	L	C
Oil/Gas	Entire WSA	L	B
Tar Sands/Oil Shale	Entire WSA	O	C
Limestone	Entire WSA	O	B
Bentonite	Entire WSA	L	A
Diatomite	See map 4	M	A
	Rest of WSA	O	B
Zeolites	Entire WSA	L	A
Sodium	Entire WSA	L	A

Legend

Level of Potential:

O - No indication for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Moderate potential for accumulations of energy/mineral resource
H - High potential for accumulations of energy/mineral resource

Level of Certainty:

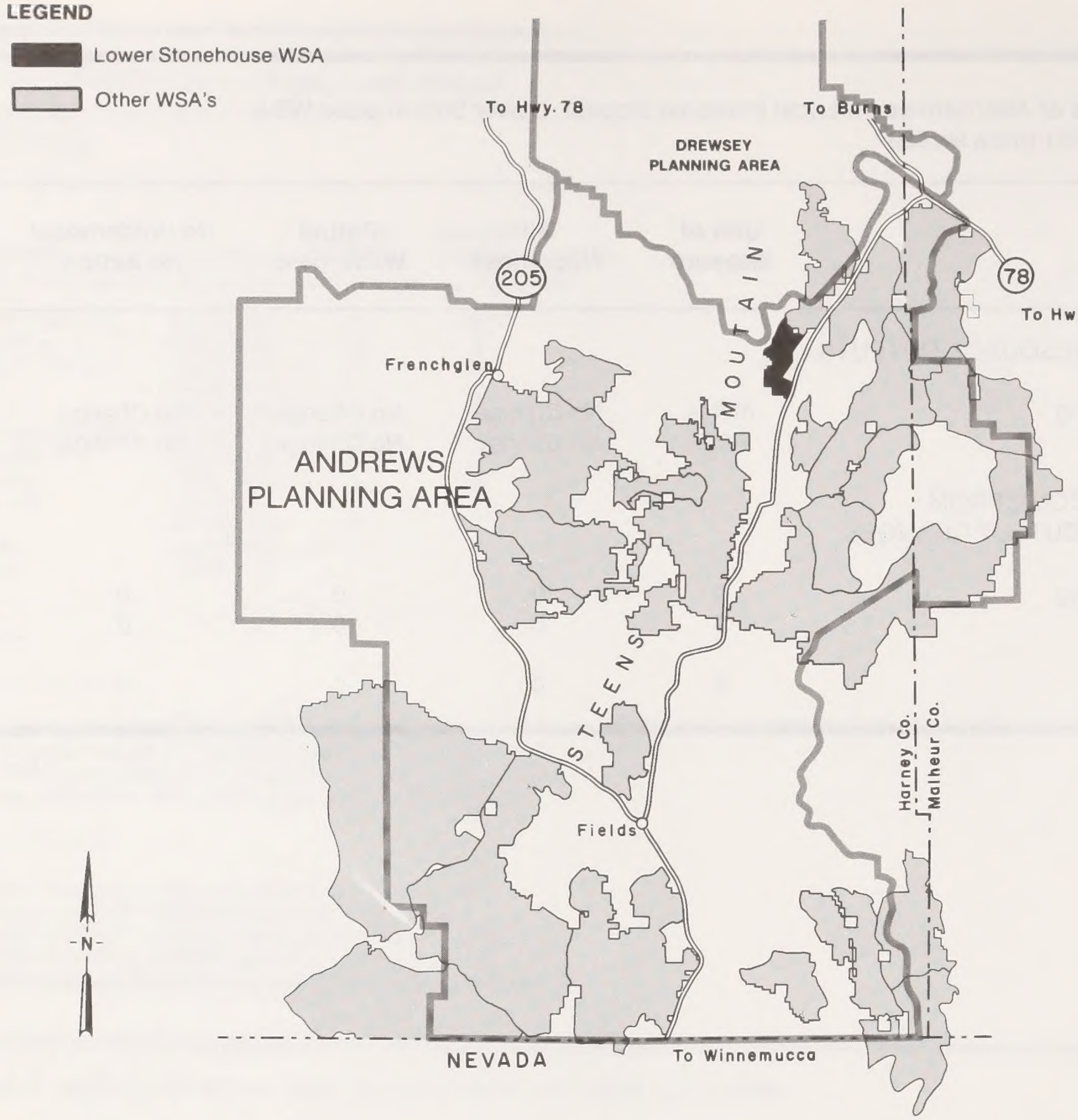
Confidence Level A - Insufficient data or no direct evidence
Confidence Level B - Indirect evidence available
Confidence Level C - Direct evidence but quantitatively minimal
Confidence Level D - Abundant direct and indirect evidence

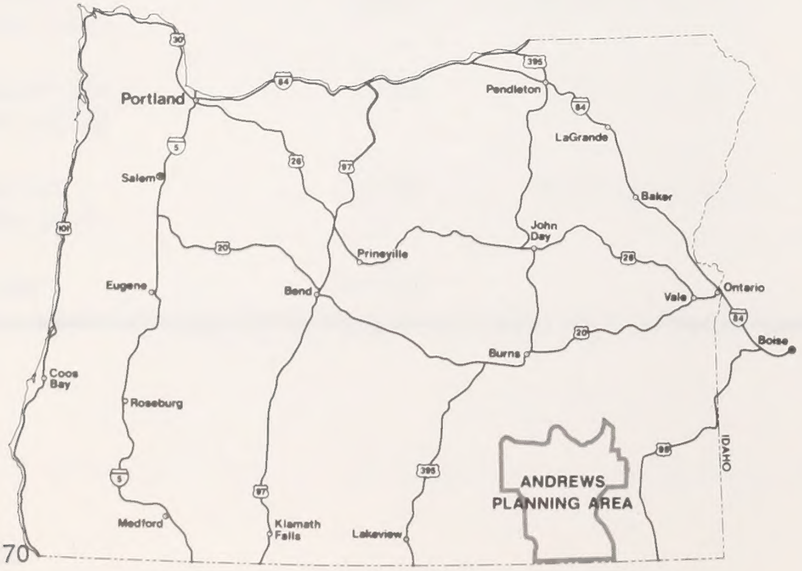
Table 4. Existing Livestock Use, Lower Stonehouse WSA (OR-2-23M)

Grazing Allotment	Licensed AUMs in Allot.	Period of Use	Percent of Allot. in WSA	Current Actual Use in WSA (AUMs)
Alvord (No. 6012)	8,803	07-01 to 09-15	1	150
Mann Lake (No. 6026)	3,600	04-16 to 06-15	4	230
Pollock (No. 6011)	4,760	06-16 to 06-30	4	150
Total	17,163			530

Table 5. Effects of Alternatives on Local Personal Income, Lower Stonehouse WSA (OR-2-23M) (1981 price levels)

Item	Unit of Measure	All Wilderness	Partial Wilderness	No Wilderness/ No Action
CHANGES IN RESOURCE OUTPUTS				
Livestock Grazing	AUMs	No Change	No Change	No Change
Recreation Use	RVD	No Change	No Change	No Change
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES				
Livestock Grazing	$	0	0	0
Recreation Use	$	0	0	0
Total	$	0	0	0





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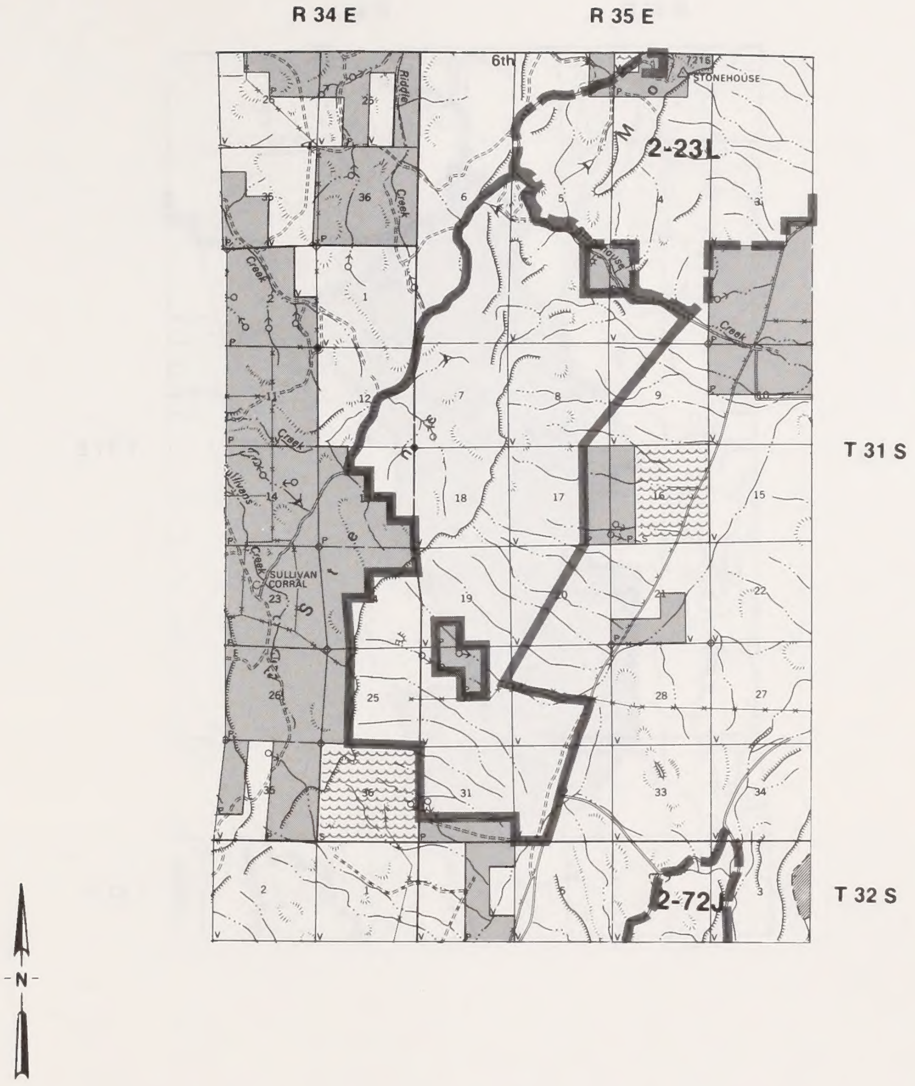
Lower Stonehouse WSA
OR-2-23M

LOCATION MAP

10 0 10 MILES

MAP 1



LEGEND

▭ BLM Land in WSA Studied Under Section 603 of FLPMA

▬ Wilderness Study Area Boundary

▬ ▬ Boundary of Adjacent Wilderness Study Areas

☐ Bureau of Land Management

■ Private

▨ BLM Surface-State or Private Subsurface (Split Estate)

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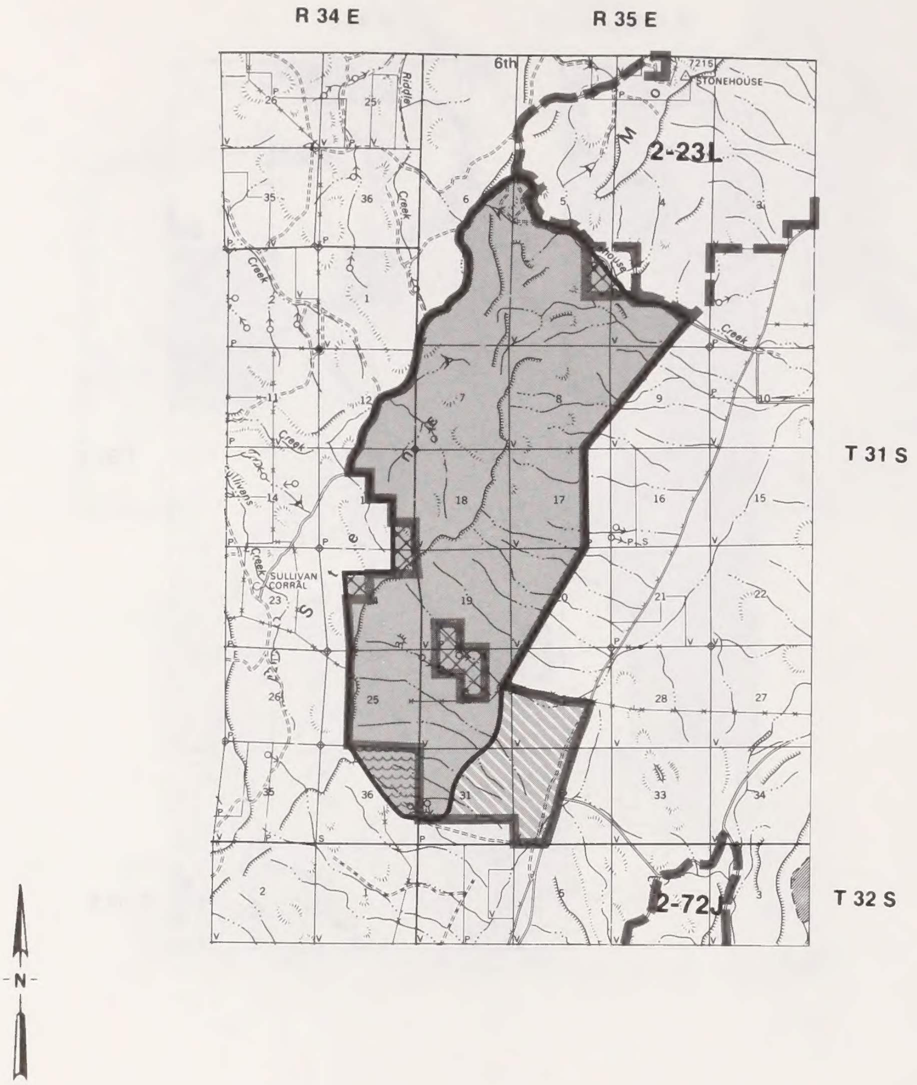
Lower Stonehouse WSA
OR-2-23M

LAND OWNERSHIP

1 0 1 2 MILES

MAP 2



▬ Wilderness Study Area Boundary

▬ ▬ Boundary of Adjacent Wilderness Study Areas

▢ Recommended Suitable for Wilderness

▧ Recommended Non-suitable for Wilderness

▩ Non-Federal Land within Recommended Wilderness

▒ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness

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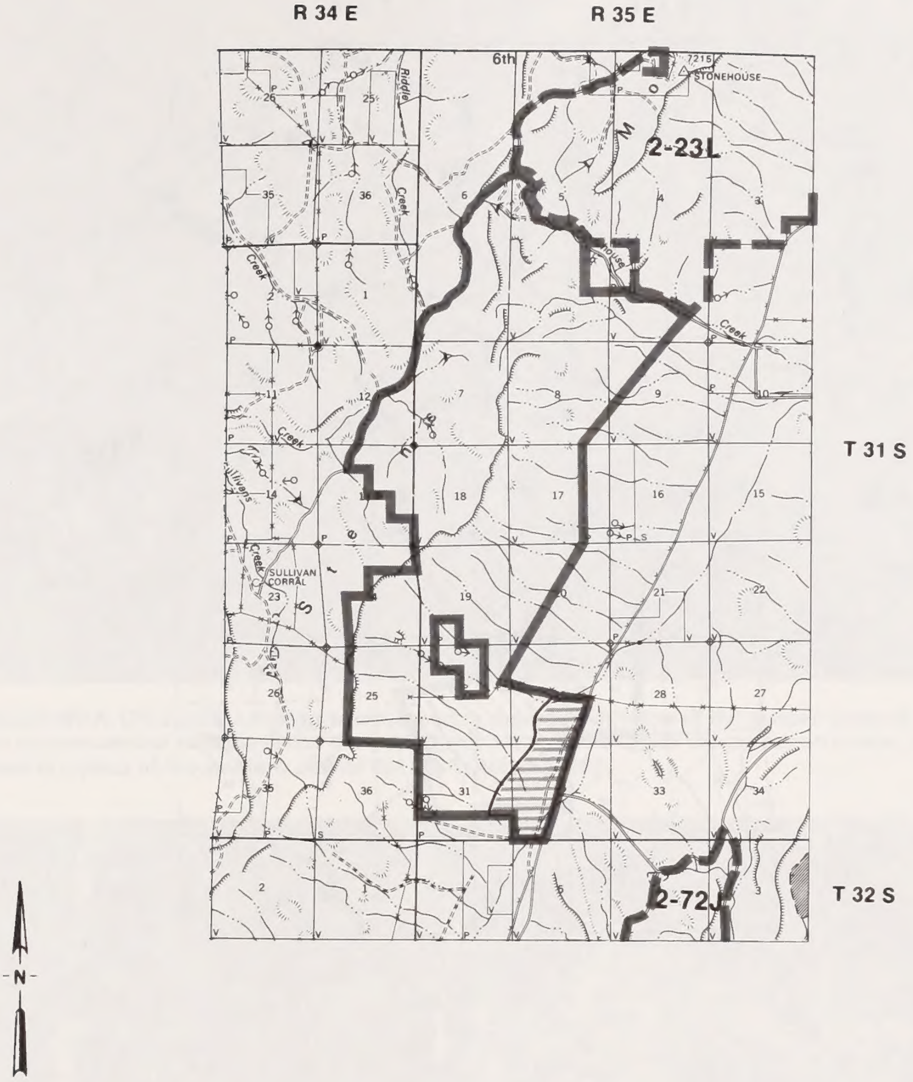
Lower Stonehouse WSA
OR-2-23M

PARTIAL ALTERNATIVE

1 0 1 2 MILES

MAP 3



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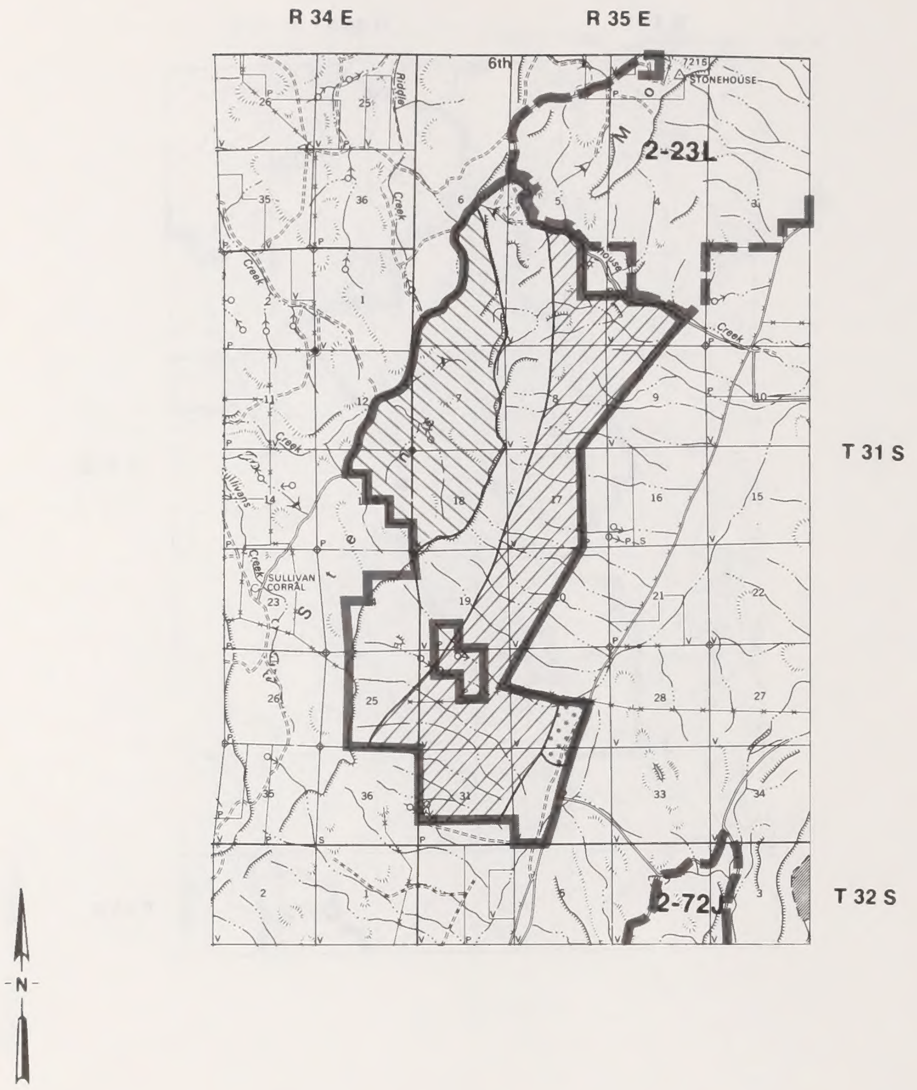
Lower Stonehouse WSA
OR-2-23M

MODERATE OR HIGH POTENTIAL MINERAL OR ENERGY RESOURCES

▤ **Moderate Potential (MA) for Diatomite**

1 0 1 2 MILES

MAP 4



▨ Lipinus biddlei

▨ Deer Winter Range

▨ Sage Grouse Habitat

U. S. Department of the Interior
Bureau of Land Management
Burns District

Lower Stonehouse WSA
OR-2-23M

SPECIAL FEATURES

1 0 1 2 MILES

MAP 5

Lower Stonehouse WSA, OR-2-23M. Looking south showing the western slope of the plateau west of the ridgeline. Within the area recommended suitable under the partial and nonsuitable under the proposed action (no wilderness/no action). The view is typical of the western side of the WSA. August 1983.

Lower Stonehouse WSA, OR-2-23M. A day hiker in an aspen stand along the east-facing escarpment near the northern end of the study area. Within the area recommended as suitable under the partial and nonsuitable under the proposed action (no wilderness/no action), July 1983.

Lower Stonehouse WSA, OR-2-23M. Looking east down Stonehouse Creek which divides Lower Stonehouse from the adjacent Stonehouse WSA (OR-2-23L) to the north. Within the area recommended suitable under the partial and nonsuitable under the proposed action (no wilderness/no action) alternative. A large rock outcropping rises high above the Stonehouse Creek drainage. July 1983.

Appendix to the Wilderness Environmental Impact Statement for Oregon

Sheepshead Mountains Group Wilderness Study Areas

Sheepshead Mountains (OR-2-72C), Wildcat Canyon (OR-2-72D), Heath Lake (OR-2-72F), Table Mountain (OR-2-72I), West Peak (OR-2-72J), and Palomino Hills (OR-3-114)

1. Introduction

General Description of the Study Area

Six Wilderness Study Areas (WSAs) are located in the Sheepshead Mountains Group: Sheepshead Mountains, Wildcat Canyon, Heath Lake, Table Mountain, West Peak, and Palomino Hills. The study areas are located southeast of Burns (about 65 miles) and northwest of Burns Junction (about 4 miles) in Harney and Malheur Counties (see Map 1). The nearest major highway is Oregon State Highway 78, which forms the northern boundary of the Sheepshead Mountains and Palomino Hills WSAs.

The six study areas together contain 213,467 acres of public land within an area 25 miles long (north to south) and 27 miles wide (east to west). The outside boundary of the combined area is formed primarily by roads, including Oregon State Highway 78 on the north and a standard gravel county road on the northwest (see Map 2) and small scattered parcels of private land on all sides.

All of the study areas are separated by a network of BLM low standard dirt roads. These roads are used and maintained on an as-needed basis by BLM personnel and range users. The roads are also used by private landowners and recreationists. In addition, the area contains numerous parcels of split-estate land and several parcels of private land.

An area of public land totaling 16,400 acres (including 1,200 acres of split-estate land) is located along the western side of the group of WSAs and is referred to in this appendix as the Sulphur Springs area. Although not designated as a wilderness study area, the Sulphur Springs area is bounded on three sides by three WSAs and is included in one of the alternatives analyzed in this appendix.

The Sheepshead Mountains Group contains a variety of topographic features. The eastern and southern portions of the area include a plateau with elevations mostly above 5,000 feet. The eastern edge of this plateau is characterized by rolling hills and broad, gentle alluvial fans which slope down to the 4,000-foot-level. On the southern edge of the plateau, the descent to the lower elevations is much more abrupt and is typified by steep south-facing ridgelines and a few deeply-cut canyons.

The western edge of the Sheepshead Mountains Group is much different in character. Like the southern portion of the area, the plateau ends abruptly near the center of the area along steep ridgelines which, in this part of the area, have west-facing slopes. The remainder of the western side of the Sheepshead Mountains Group contains a series of steep east-facing ridgelines with gentle western slopes, separated by low basins or depressions. Most of the ridgelines in this part of the Sheepshead Mountains Group reach an elevation of about 5,000 feet with the depression areas occurring at the 4,000-foot-level, or slightly lower. Several of the basins are playa lakebeds which are seasonally flooded in early spring.

The dominant vegetation in all of the study areas is big sagebrush and bluebunch wheatgrass. Within portions of the individual study areas, other species are dominant. These include shadscale, greasewood, low sagebrush and silver sagebrush. Generally these species occur in small localized areas.

Sheepshead Mountains WSA (OR-2-72C)

The Sheepshead Mountains WSA contains 54,390 acres of public land, including 3,270 acres of split-estate lands. The study area has an irregular, oblong shape and is about 13.5 miles long, from north to south and is about 6 miles in width. The boundary of the area is formed by roads except for small portions in the north and east, which are bounded by private land. The boundary roads on the east, south and west are all BLM low standard dirt roads while the northern boundary includes portions of a state highway (on the northeast) and a standard gravel county road (on the northwest).

Also forming part of the boundary are five low standard dirt dead-end roads. These roads enter the area from the northwestern and eastern sides of the WSA and total 11.5 miles. One of these roads ends within a 760-acre parcel of private land in the northern portion of the study area. Although entirely surrounded by BLM land, this parcel and the road leading to it are actually part of the study area's boundary. Within the boundary of the WSA is a 40-acre parcel of private land.

The most prominent physical feature within this study area is Sheepshead Ridge, a large, west-facing escarpment running 8 miles through the center of the area (from north to south) and rising between 600 and 1,300 feet above the lower elevation country to the west. East of the escarpment, the terrain gradually rises in elevation to the crest of a ridge before sloping gently downward to the east. The study area reaches its highest elevation of 6,289 feet along this ridgeline. The area east of the ridge is a high plateau of gently-rolling hills and relatively-shallow drainages.

West of the ridge, the study area consists of low-lying basins, rounded buttes and foothills. The largest of the basins lies in the northeastern portion of the WSA and includes Folly Farm Flat and Sunrise Valley which, at 4,060 feet, is the lowest portion of the study area.

Heath Creek, an intermittent stream, is the largest drainage in the WSA. It begins in the central portion of the study area east of the ridgeline, and winds its way south and then northwest through broad valleys and a narrow canyon (where it cuts through the ridgeline) before leaving the study area on the western boundary. This creek and its tributaries drain most of the southern end of the study area.

Wildcat Canyon WSA (OR-2-72D)

Southeast of the Sheepshead Mountains WSA is the Wildcat Canyon Study Area which contains 34,830 acres of public land and includes 2,110 acres of split-estate land. Somewhat rectangular in shape, this study area is about 12 miles long (northwest to southeast) and 6 miles wide (north to south). The boundary of the area is formed by BLM low standard dirt roads on all sides with the exception of one small parcel of private land which also forms part of the boundary. One low standard dirt dead-end road enters the area from the north for about 2 miles and is part of the boundary.

Much of the area consists of open, gently-rolling sagebrush-covered hills characteristic of the southeastern edge of the Sheepshead Mountains plateau. This type of terrain is especially common around the perimeter and eastern side of the study area. However, the terrain is much more rugged in the western and central portions of the area where the plateau is deeply cut by several intermittent creeks which drain to the south. These drainages include Wildcat Creek, Mickey Creek and Bone Creek. Along with their smaller unnamed tributaries, these creeks have formed a number of prominent canyons. Wildcat Canyon is the most pronounced of these drainages with rocky rims and steep walls. Portions of both Wildcat Canyon and Mickey Canyon reach depths of 400 to 600 feet.

The highest point in the study area occurs along the western boundary, where the plateau reaches 6,100 feet. The plateau drops sharply at an east-west trending ridgeline along the southern side of the WSA to 4,074 feet, the lowest elevation in the WSA.

Heath Lake WSA (OR-2-72F)

To the west of the Sheepshead Mountains Study Area lies the Heath Lake WSA. This irregularly-shaped study area contains 20,520 acres of public land, including 420 acres of split-estate land. The WSA is 10.5 miles long (north to south) and 5 miles wide at its widest point.

The area is bounded on the east and south by BLM low standard dirt roads and is somewhat triangular in shape. The western boundary is primarily formed by a standard gravel county road but also contains private land.

The dominant physical feature in this area is a ridgeline which runs north to south through the center of the WSA. The ridgeline drops sharply (600 to 800 feet) to the east along a steep, rocky, eastern face. At the base of the ridge, the topography is much less rugged with two intermittent lakes in the north (Heath Lake and South Lake) and some small ridges and buttes in the south. Along the southern boundary is another intermittent lake which is much smaller than either Heath Lake or South Lake. The western side of the WSA contains gently-rolling hills and scattered rock outcroppings as the ridgeline slopes steadily down to the western boundary. The elevations in the study area range from a high of 5,128 feet on the ridgeline to a low of 4,076 feet at South Lake.

Table Mountain WSA (OR-2-72I)

The Table Mountain WSA is south of Heath Lake, southwest of the Sheepshead Mountains WSA, and west of the Wildcat Canyon WSA. The Table Mountain WSA contains 40,592 acres of public land including 1,992 acres of split-estate land. The area is somewhat long (17 miles from north to south) and narrow (3+to 4 miles) except in the northern portion where it widens to over 8 miles. With the exception of two parcels of private land on the south, the study area is bounded by BLM low standard dirt roads.

Two low standard dead-end roads, each about 1-mile in length, enter the WSA from the east and form part of the boundary.

This WSA includes the southern plateau area southwest of the Sheepshead Mountains WSA and contains two prominent physical features: Table Mountain, a large flat-topped butte located in the north central portion of the area, which rises to an elevation of 6,060 feet; and a large, flat, usually dry playa which lies along the southern boundary. This playa, locally known as Mickey Basin, lies within a large basin which covers over 2,300 acres and is the lowest point in all six of the WSAs at 3,912 feet. The remainder of the study area consists of a variety of features including steep ridgelines and escarpments, relatively flat-topped tableland and low elevation valleys around the perimeter.

The highest point in the WSA (and in the Sheepshead Mountains Group), occurs along one of the ridgelines in the southwestern portion of the area. This ridge, Mickey Butte, reaches an elevation of 6,294 feet as it rises abruptly above the surrounding landscape. This is one of the most impressive portions of the study area, as the rocky-faced escarpment towers nearly 2,400 feet above the adjacent Mickey Basin. The study area is cut by numerous small draws and canyons, but there are no major drainages, intermittent streams or perennial streams within the WSA.

West Peak WSA (OR-2-72J)

West of Table Mountain WSA is the West Peak study area. The West Peak WSA is the westernmost study area of the Sheepshead Mountains Group and contains 8,535 acres of public land including 635 acres of split-estate land. The boundary of the study area is formed by BLM low standard dirt roads.

Containing the western foothills and basins of the Sheepshead Mountains, the most prominent feature of the study area is the ridgeline which runs north and south through the WSA and terminates with a 6,068-foot peak near the southern boundary. This ridgeline runs along the western side of the area and slopes moderately toward that boundary. The steep eastern side of the ridge drops sharply into a relatively-flat portion of the WSA which contains widely-scattered buttes. It is along the eastern side of the ridgeline near the northern boundary that the study area reaches its lowest elevation of 3,960 feet.

Palomino Hills WSA (OR-3-114)

The Palomino Hills WSA is located on the extreme eastern side of the Sheepshead Mountains Group. It lies along the northern boundary of the Wildcat Canyon WSA and east of the Sheepshead Mountains WSA. The study area contains 54,600 acres of public land in a rectangular shape which is nearly 15 miles long (northwest to southeast) and about 8 miles wide. There are 4,040 acres of split-estate lands included within the WSA. With the exception of two parcels of private land (on the west and south) the area is bounded entirely by roads. The road on the northeastern boundary is Oregon State Highway 78 while all of the other roads are BLM low standard dirt roads.

One low standard dirt dead-end road penetrates the WSA from the east for about 2.5 miles and is also part of the study area boundary.

Lying on the eastern slope of the Sheepshead Mountains plateau, the Palomino Hills Study Area features a series of rolling hills cut by numerous intermittent drainages. The entire study area gradually slopes from the higher plateau country on the west to the flatter and lower elevation country on the northeast and east. The highest point in the WSA (5,808 feet) occurs on the plateau near the boundary with the Sheepshead Mountains study area, while the lowest point (4,202 feet) occurs near the eastern boundary.

Other features of the area include the southwestern edge of the Saddle Butte Lava Field, located in the western and northeastern portion of the study area. On the southwest side of the study area are two of the WSA's large drainages. Both intermittent streams, Palomino Creek and Antelope Creek, have carved short but substantial canyons (400 to 700 feet in depth), as they drain the Sheepshead Mountains plateau from west to east. The Palomino Hills, a series of small rolling hills, are located in the southeastern portion of the WSA.

Sulphur Springs Area

The Sulphur Springs portion of the Sheepshead Mountains Group is located on the western side of the complex, south of Heath Lake WSA, west of Table Mountain WSA and north of West Peak WSA. This parcel of public land contains 16,400 acres in a long (9 miles north to south) and somewhat narrow (4.5 miles at the widest point) configuration. The area being analyzed is bounded by BLM standard dirt roads on the three sides and a steep ridgeline on the west. A BLM road cuts through the center of the area and passes through a 160-acre parcel of private land.

The Sulphur Springs area is typical of the topography on the west side of the Sheepshead Mountains: steep east-facing ridges and low valleys and depressions. The highest point in the area (5,005 feet) occurs along Coffin Butte, a ridgeline on the east side of the area while the lowest point (3,960 feet) occurs in a basin at the base of the western ridgeline.

Interrelationships

The boundary of the Sheepshead Mountains Group along Highway 78 follows the edge of a 75-foot-wide highway and utility right-of-way and the edge of seven Oregon State Highway Division material sites.

Three other wilderness study areas also share common boundaries with the WSAs in the Sheepshead Mountains Group. All of the adjacent study areas lie along the southern edge of the group and include the Alvord Desert (OR-2-74), East Alvord (OR-2-73A) and Winter Range (OR-2-73H) WSAs. The Alvord Desert WSA is adjacent to the Wildcat Canyon Study Area on the southeastern corner of the group. On the southwestern corner, the Table Mountain WSA is adjacent to both East Alvord and Winter Range study areas. All of the adjacent study areas are separated from the Sheepshead Mountains Group by the Mickey Hot Springs Road. This BLM low standard dirt road is used and maintained by the BLM and livestock operators, and is also used by private landowners and recreationists.

The WSAs are located within ODFW's Whitehorse Wildlife Management Unit which contains 4,882-square-miles of land. The WSAs support a summer population of an estimated 325 deer and 380 antelope and a winter population of 800 deer and 400 antelope. ODFW has not set management objectives for antelope, but has an objective of 5,500 deer for the Whitehorse Wildlife Management Unit. Most of the deer wintering in the WSAs come from Steens Mountain when deep snow occurs. Few deer use the WSAs during the summer due to lack of water and lack of suitable cover.

Kit fox habitat occurs in the Sheepshead Mountains area. ODFW's management objective for kit fox is to restore populations of the State-listed threatened species to a non-listed status. The goal for nongame wildlife is to maintain populations of naturally-occurring species at self-sustaining levels.

The Sheepshead Mountains area is one of five areas identified in BLM's Burns District as a potential relocation site for California bighorn sheep. It is a high priority release site. ODFW has an objective of 200 bighorns in the area. California bighorn sheep is a candidate for Federal listing as threatened or endangered. The BLM's bighorn sheep management objectives for the Sheepshead Mountains, which provide for protection of bighorn habitat, were developed in conjunction with ODFW as reflected in the Burns District Bighorn Sheep Habitat Management Plan and the Andrews Land Use Plan.

The proposed action conforms with ODFW's management objectives for deer and bighorn sheep, but does not conform with their objectives for kit fox and nongame species.

The WSAs are part of three wild horse herd management areas (HMAs). Parts of Sheepshead Mountains, Heath Lake and Table Mountain WSAs are in the Heath Creek-Sheepshead HMA. All of Palomino Hills and part of Wildcat Canyon and Sheepshead Mountains WSAs are in the Sheepshead HMA. The Alvord-Tule Springs HMA includes parts of Sheepshead Mountains, Wildcat Canyon, Table Mountain and West Peak WSAs. Management of the HMAs, except for access to the trap site which is analyzed in this appendix, will not be significantly affected by any of the alternatives.

Harney County and Malheur County have not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study and EIS planning, scoping and public review process. These issues concern both the effects of wilderness designation on existing and potential land uses or resources in the WSAs, as well as the effects of existing and potential land uses or resources on wilderness values. Land uses or resources raised as issues specifically for these WSAs include:

- impact on areas' wilderness values,
- impact on plant species of special interest, kit fox habitat and potential habitat for bighorn sheep in the area,
- impact on existing use of the area by military aircraft,
- impact on management of wild horses in the area (see Statewide EIS volume),
- impact on potential geothermal, oil and gas, and other mineral resource development, and
- impact on potential to improve livestock grazing through range improvements such as reservoirs, spring developments, brush control projects, seedings, pipelines, wells and fences.

No other issues specific to this WSA were raised by BLM or the public.

2. Description of the Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made.

The following alternatives are analyzed:

- all wilderness
- enhanced wilderness
- proposed action
- no wilderness/no action

The enhanced wilderness alternative does not analyze the possible combination of the Table Mountain and Wildcat Canyon WSAs with the adjacent study areas to the south. The combination would not be practical due to the importance of the road which separates the WSAs. This road, the Mickey Hot Springs Road, provides access for a variety of users including livestock operators, recreationists, BLM personnel and private landowners. The road provides access to the southern end of the Sheepshead Mountains and the northern portions of the Alvord Desert Basin and Barren Valley areas, a large region where access is already limited. In addition, combining the study areas in the Sheepshead Mountains with the adjacent WSAs to the south would not substantially enhance the manageability of any of the study areas.

A partial alternative for each WSA is not analyzed because there are no opportunities to eliminate resource conflicts by reducing the size of the area recommended suitable for each individual study area and still maintain an area which has wilderness qualities.

All Wilderness

The all wilderness alternative would recommend all of the public land in each of the wilderness study areas in the Sheepshead Mountains Group suitable for wilderness: 54,390 acres in the Sheepshead Mountains WSA, 34,830 acres in the Wildcat Canyon WSA, 20,520 acres in the Heath Lake WSA, 40,592 acres in the Table Mountain WSA, 8,535 acres in the West Peak WSA, and 54,600 acres in Palomino Hills WSA, totaling 213,467 acres (see Map 2). Under this alternative, each of the study areas would be recommended suitable as a separate wilderness area. The boundary and dead-end roads would remain open, and 121 miles of ways would be closed. For purposes of analysis, it is assumed that neither the mineral estate portion of the split-estate land nor the private land in, or adjacent to, any of the WSAs would be acquired.

Energy and Mineral Development Actions

Wilderness designation would withdraw a total of 201,000 acres of public land in the six WSAs that form the Sheepshead Mountains Group, from all forms of appropriation under the mining and mineral leasing laws. See Table 1 for details on acreages in each WSA.

Lands remaining open to mineral exploration and development would include the private inholding and the mineral estate of the split-estate lands totaling 40 acres and 12,467 acres, respectively.

There is a lack of geological evidence to project extensive exploration or discovery of oil and gas resources on the scattered private and split-estate lands that would remain open under this alternative (see Table 1). Therefore, no exploration or development is projected on these lands.

Acreage with high or moderate potential for occurrence of geothermal resources is limited to three WSAs within the Sheepshead Mountains Group (see Table 1). It is projected that only casual exploration for geothermal resources would occur.

Locatable mineral potential varies among the six WSAs in the Sheepshead Mountains Group (see Table 1). Portions of the Sheepshead Mountains and Wildcat Canyon WSAs have a moderate potential for occurrence of diatomite, mercury, silver, copper and gold. The Sheepshead Mountains WSA also includes a small acreage (1,300 acres) having a moderate potential for the occurrence of zeolites. Portions of Heath Lake, West Peak and Table Mountain WSAs have a moderate potential for occurrence of diatomite and copper deposits and sections of the Palomino Hills WSA have a moderate potential for the occurrence of diatomite and zeolite.

Since there is a lack of direct evidence, low interest in the area and no known developable ore bodies or deposits of any of these commodities within the six WSAs, only casual exploration for mineral resources is projected to occur on the split-estate and private lands.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and to be consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Bighorn sheep would be reintroduced as proposed by ODFW. Access for maintenance of the Bone Springs Exclosure in the Wildcat Canyon WSA and the Rock Corral Exclosure and the Bone Creek Reservoir Exclosure in the Palomino Hills WSA would be on horseback. Maintenance needs would be determined annually by aircraft. If maintenance was needed, the Getty Spring Exclosure in the Table Mountain WSA would be abandoned due to the increased difficulty in gaining access after closure of ways.

Horse Trap Access Actions

The Heath Creek horse trap would not be used and another site would have to be located outside the WSA. The first 6 miles of access road would remain open, but the last 4 miles of way that extend beyond the end of the road would be closed.

Livestock Management Actions

Livestock grazing in the Sheepshead Mountains Group WSA and within portions of five allotments would remain at the current estimated level of 8,613 AUMs which includes 207 AUMs of temporary, nonrenewable use. This temporary use is in the Alvord allotment and involves the Wildcat Canyon WSA (27 AUMs) and Table Mountain WSA (180 AUMs). This use could become permanent depending upon the results of monitoring.

The season of use and distribution of AUMs for all allotments and WSAs are shown in Table 7.

Vehicle use for livestock management and facility inspection and maintenance of 38 miles of fence on 121 miles of ways would be precluded. Fence inspection and maintenance would be done on foot or by the use of riding or pack animals. Mechanized heavy equipment would be used on an average of once every 10 years to maintain 97 reservoirs and 21 springs and every 2 years for four wells.

Recreation Management Actions

The entire 213,467 acres (excluding 96 miles of roads) would be closed to motorized vehicle use. This action would close 121 miles of ways. Current recreational use is estimated to be 300 visitor days per year. Most of the current recreational use is dependent upon vehicular access.

Enhanced Wilderness

Under the enhanced wilderness alternative, the six WSAs would be combined and all 213,467 acres of public land in the WSAs, plus 16,400 acres of public land outside of the WSAs (Sulphur Springs area), would be recommended suitable for wilderness designation (see Map 3). In addition, an attempt would be made to acquire 1,580 acres of the private inholdings and adjacent lands, as well as the mineral estate of the 13,667 acres of split-estate parcels within the recommended suitable boundary. Assuming acquisition of the private land and the addition of public land in the Sulphur Springs area, the total area recommended suitable under this alternative would be 231,447 acres.

As part of this alternative, 70 miles of WSA-boundary roads, 26 miles of dead-end roads totaling 96 miles and 125 miles of ways would be closed. Livestock operators would be allowed to use vehicles on a limited basis to maintain range developments.

Minor boundary adjustments would be made to the Sheepshead Mountains Group, mostly by acquisition of private lands around the perimeter and by closing the boundary roads. Instead of following the northern, western and southern boundaries of the West Peak, Table Mountain and Heath Lake WSAs (respectively), the boundary along the west would follow a 0.5-mile section of fence from the southern end of the Heath Lake WSA south along a ridgeline until it ties in with the northern boundary of the West Peak WSA. The road which crosses through the Sulphur Springs area would also be closed under this alternative and an attempt would be made to acquire the parcel of private land and the mineral estate portion of the split-estate lands.

Energy and Mineral Development Actions

Wilderness designation would withdraw 216,200 acres of public land within all six WSAs, and including the Sulphur Springs area, from all forms of appropriation under the mining and mineral leasing laws. If acquisition is successful, 13,667 acres of split-estate lands and 1,580 acres of private lands would be closed to mineral entry for a total of 231,447 acres. The areas of moderate and high potential for occurrence of energy and mineral resources that would be withdrawn under this alternative are listed in Table 1.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Bighorn sheep would be reintroduced as proposed by ODFW. Access for maintenance of the Bone Springs Exclosure in the Wildcat Canyon WSA and the Rock Corral Exclosure and the Bone Creek Reservoir Exclosure in the Palomino Hills WSA would be on horseback. Maintenance needs would be determined annually by using aircraft. Maintenance of the Getty Spring Exclosure in the Table Mountain WSA would be abandoned due to difficult access resulting from the closure of ways and roads.

Horse Trap Access Actions

The entire access (6 miles of road and 4 miles of way) to the Heath Creek horse trap would be closed. Another trap site outside the WSA would have to be established.

Livestock Management Actions

Livestock grazing in the Sheepshead Mountains Group WSA and within portions of five allotments would remain at the current estimated level of 9,447 AUMs which includes 329 AUMs of temporary nonrenewable use. This temporary use is in the Alvord allotment and involves the Wildcat Canyon WSA (27 AUMs) and Table Mountain WSA (180 AUMs), and the Sulphur Springs area (122 AUMs) and could become permanent depending upon the results of monitoring.

Vehicle use for livestock management and facility inspection and maintenance of 39 miles of fence on 125 miles of ways, 70 miles of boundary roads and 26 miles of dead-end roads totaling 96 miles, would be severely limited. Fence inspection and maintenance would be done on foot or by the use of riding or pack animals. Mechanized heavy equipment would be used on an average of once every ten years to maintain 106 reservoirs and 21 springs and every two years for 6 wells.

Recreation Management Actions

Assuming acquisition of the private inholdings, 96 miles of roads and 125 miles of ways would be closed to vehicle use. Current recreational use is estimated to be 300 visitor days per year. Most of this recreation use utilizes motorized vehicles for access into the area using existing roads and ways.

Proposed Action

The proposed action recommends 105,720 acres of public land within the Sheepshead Mountains Group suitable as wilderness (see Map 4). Under this alternative, all or part of three of the six wilderness study areas in the group would be recommended as suitable for wilderness designation. The areas recommended as suitable include 45,705 acres of public land in the Sheepshead Mountains WSA, all 34,830 acres of public land in the Wildcat Canyon WSA, and 25,185 acres in the Table Mountain WSA. The dead-end roads which enter the three study areas, totaling 9.75 miles would be closed. Vehicle use on the 6 miles of dead-end road and 4 miles of way to Heath Creek horse trap would continue. WSA boundary roads would remain open.

In addition, certain inholdings and boundary parcels of private land would be recommended for acquisition. An attempt would be made to acquire 435 acres of private land through purchase or exchange with willing landowners. An attempt would also be made to acquire the mineral estate of 5,340 acres of split-estate land. Assuming acquisition of private land, the total area recommended suitable under this alternative would be 106,155 acres.

The proposed action also recommends 107,747 acres of public land nonsuitable for wilderness. This includes portions of two study areas and all of three WSAs. The areas not recommended for wilderness include 8,685 acres of the Sheepshead Mountains WSA, all 20,520 acres of the Heath Lake study area, 15,407 acres in the Table Mountain area, all 8,535 acres of the West Peak WSA and all 54,600 acres of public land in the Palomino Hills WSA.

Existing boundaries of the study areas would change along the northern portion of the Sheepshead Mountains WSA and the southern end of the Table Mountain WSA. Otherwise, with the exception of minor boundary changes due to the acquisition of private lands and the closure of low standard dirt dead-end roads, the boundaries of three study areas recommended for wilderness would not change.

In the extreme northern end of the Sheepshead Mountains study area, the boundary would follow a vehicle way which runs from the eastern boundary road west to the north central portion of the study area. From this point, the boundary would continue in a westerly direction along the summit of a ridgeline. About a mile from the northwestern boundary with the county road, the boundary would turn south and follow a drainage until it intersects the existing western boundary.

The northern portion of the Sheepshead Mountains Group is not recommended suitable under this alternative because this area is influenced by the outside sights and sounds related to the state highway which forms most of the WSAs' northern boundary, and the highway which forms part of the northwestern boundary. In addition, manageability problems could also occur in this part of the WSA due to the presence of unmarked private land.

The area not recommended for wilderness in the southern portion of the Table Mountain WSA includes 15,407 acres of public land. The boundary of the proposed action would be drawn along a legal subdivision. From the existing western boundary of the Table Mountain study area, the boundary would turn east for about 3 miles along the legal subdivision. The boundary would then intersect a ridgeline and follow the crest of the ridge for about 1 mile until it joins with the existing southern boundary, the Mickey Hot Springs Road, a standard dirt road.

The area to the south of this boundary includes the Mickey Basin area and several steep ridgelines and escarpments. This area is not recommended as suitable under the proposed action because of the potential value of the area for geothermal development. Almost all of this portion of the Table Mountain WSA has been rated as having high potential for the occurrence of a commercially-valuable geothermal resource.

The Heath Lake, West Peak and Palomino Hills wilderness study areas are not recommended as suitable for wilderness because of the areas' value for resource development and because they have limited wilderness values.

Energy and Mineral Development Actions

Under the proposed action, wilderness designation would withdraw a total of 100,380 acres of public land from all forms of appropriation under the mining and mineral leasing laws. If acquisition is successful, 5,340 acres of split-estate would also be closed to mineral entry, for a total of 106,155 acres (see Table 1).

The 106,155 acres proposed for wilderness designation have a moderate potential for the occurrence of oil and gas based on indirect evidence (see Table 1). However, due to the lack of direct evidence, a thick basalt layer covering the area, and no known developable deposits, no exploration or development is projected.

Acreage with high or moderate potential for geothermal resources is limited to portions of the Wildcat Canyon and Table Mountain WSAs (see Table 1).

Nearly all of the high potential geothermal acreage and all of the KGRA are in the portion recommended nonsuitable. Because of this high potential for geothermal resources, it is expected that seven exploration temperature gradient wells would be drilled using truck-mounted drills, without road construction. This exploration would disturb three acres.

It is expected that any development resulting from exploration would occur within the Table Mountain WSA. If exploration is successful, the following mineral scenario could take place in the southeastern portion of the WSA.

A 10-megawatt power plant and geothermal collection field would be developed, utilizing 30 acres. The transmission line and roads to and from the plant would disturb 10 acres for 2.5 miles of construction. A total of 40 acres would be disturbed by geothermal activities.

Locatable mineral potential varies between the three WSA areas proposed for wilderness designation under the proposed action (see Table 1).

Portions of the Sheepshead Mountains and Wildcat Canyon WSAs have a moderate potential for the occurrence of diatomite, mercury, silver, copper and gold. Sheepshead Mountains WSA also includes a small acreage (1,300 acres) having a moderate potential for zeolites. The areas identified as having a moderate potential for copper and diatomite would be in the portion recommended nonsuitable. Due to a lack of direct evidence, no known developable deposits, interest in the area noticeably subsiding in recent years, a thick layer of basalt covering much of the area and a producing diatomite mine elsewhere in the region, only casual exploration for these minerals without development can be expected on lands open to mineral entry.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and in the suitable area, consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Bighorn sheep would be reintroduced as proposed by ODFW.

Access for maintenance of the Bone Springs Exclosure in the Wildcat Canyon WSA and the Rock Corral Exclosure and the Bone Creek Reservoir Exclosure in the Palomino Hills WSA would be on foot. These exclosures are near perimeter roads that would remain open. A short hike would be needed for access.

In the area recommended nonsuitable, projected wildlife projects include 1,000 acres of seeding of grass and four-wing saltbush on eroded soil in the Heath Lake WSA; construction of four dikes to create a 20-acre wetlands in the Table Mountain WSA and the construction of two guzzlers in the Palomino Hills WSA. Maintenance of the Getty Spring Exclosure in Table Mountain WSA would be by vehicle.

Horse Trap Access Actions

The Heath Lake horse trap would remain open and be used on an average of once every 4 years to facilitate the removal of excess numbers of wild horses. The horse trap site and access would be maintained and improved as needed. The vehicle route and horse trap site are outside of the area recommended suitable for wilderness under this alternative.

Livestock Management Actions

Livestock forage would increase within the WSA to 15,842 AUMs, which would be made available for livestock. This includes 207 AUMs of temporary nonrenewable use in the Alvord allotment and involves the Wildcat Canyon WSA (27 AUMs) and Table Mountain WSA (180 AUMs). This temporary use could become permanent depending on the results of monitoring. The 15,842 AUMs also includes the AUMs realized from range projects.

Vehicle use for livestock management and facility inspection and maintenance of 26 miles of fence on 63 miles of ways and 9.75 miles of dead-end roads would be precluded. Fence inspection and maintenance would be done on foot or by the use of riding or pack animals. Mechanized heavy equipment would be used on the average of once every 10 years to maintain 78 reservoirs and 15 springs.

The season of use and distribution of AUMs for all allotments and WSAs are shown in Table 7.

In the nonsuitable portion, the following range improvements would be constructed or developed: nine reservoirs, 5 miles of pipeline, one well, 9 miles of fence, 2,280 acres of brush control without seeding and 2,500 acres of brush control that would be seeded to adaptable forage species. These range improvements are projected to result in an increase in livestock grazing use of 2,809 AUMs. These AUMs would be used to improve livestock distribution and provide additional forage to relieve grazing pressure in areas not in the WSA. An additional 4,420 AUMs of available, but unallocated, forage would be allocated to livestock, resulting in a total use of 15,842 AUMs.

In the nonsuitable area, use for livestock management and maintenance would continue on 58 miles of ways.

Recreation Management Actions

A total of 106,155 acres (assuming acquisition of 435 acres of private land) would be closed to motorized vehicle use including 9.75 miles of dead-end road and 63 miles of ways. Current recreational use is estimated to be 300 visitor days per year. Use would continue on 107,747 acres recommended nonsuitable under this alternative. Most of the recreational use utilizes vehicles for access using existing roads and ways.

No Wilderness/No Action

The no wilderness/no action alternative would recommend the entire Sheepshead Mountains Group nonsuitable as wilderness. It represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

The entire WSA group has a moderate potential for the occurrence of oil and gas with indirect evidence to support the rating. However, due to the lack of direct geological evidence, no confirmed petroleum bearing formations, a thick volcanic covering on most of the surface and no current leases, no exploration or development of oil and gas resources is projected.

Acreage with high or moderate potential for the occurrence of geothermal resources is limited to three WSAs within the Sheepshead Mountains Group (see Table 1). There is abundant direct and indirect evidence to support these ratings. The high potential geothermal area is also part of a KGRA. Because of this high potential for geothermal resources, it is expected that seven exploration temperature gradient wells would be drilled. This exploration will disturb three acres.

It is expected that any development resulting from exploration would occur within the Table Mountain WSA. If exploration is successful, the following mineral scenario could take place in the southeastern portion of the WSA.

A 10-megawatt power plant and geothermal collection field would be developed, utilizing 30 acres. The transmission line and roads to and from the plant would disturb 10 acres for 2.5 miles of construction. A total of 40 acres of wilderness area would be disturbed by geothermal activities.

Locatable mineral potential varies between the six WSA areas. Portions of the Sheepshead Mountains and Wildcat Canyon WSAs have a moderate potential for the occurrence of diatomite, mercury, silver, copper and gold. Sheepshead Mountains WSA also includes a small acreage (1,300 acres) having a moderate potential for the occurrence of zeolites. There is indirect evidence to support this rating. There is similar indirect evidence to support the identification of portions of Heath Lake, West Peak and Table Mountain WSAs as having moderate potential for occurrence of diatomite and copper deposits. Portions of Palomino Hills WSA have a moderate potential for the occurrence of diatomite and zeolite, based on indirect evidence.

Extensive exploration for mineral resources has not been performed in any of the six WSAs included in the Sheepshead Mountains Group, although generalized geological information is available. Due to a lack of direct evidence, no known developable ore bodies, interest in the area noticeably subsiding in recent years, a thick volcanic cover of most of the area and a producing diatomite mine in the region, it is projected that only casual exploration would occur.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Bighorn sheep would be reintroduced as proposed by ODFW. Projected wildlife projects include 1,000 acres of seeding of grass and four-wing saltbush on eroded soil in the Heath Lake WSA, construction of four dikes to create a 20-acre wetlands in the Table Mountain WSA, and the construction of three guzzlers in the Wildcat Canyon WSA and two guzzlers in the Palomino Hills WSA.

BLM maintains the Bone Springs Exclosure in the Wildcat Canyon WSA and the Rock Corral Exclosure and the Bone Creek Reservoir Exclosure in the Palomino Hills WSA and the Getty Spring Exclosure in the Table Mountain WSA. This maintenance would continue to be done using motor vehicles for access.

Horse Trap Access Actions

The Heath Lake horse trap would be used on an average of once every four years to facilitate the removal of excess numbers of wild horses. The horse trap site and access would be maintained and improved as needed.

Livestock Management Actions

Livestock grazing in the Sheepshead Mountains Group WSA and within portions of five allotments would increase from 8,613 AUMs to an overall estimated 17,492 AUMs. The current use level includes 207 AUMs of temporary nonrenewable use. This temporary use is in the Alvord allotment and involves the Wildcat Canyon WSA (27 AUMs) and Table Mountain WSA (180 AUMs). This use could become permanent depending upon the results of monitoring. An additional 4,420 AUMs of livestock forage currently available but unallocated would be allocated to livestock.

All range improvements would be constructed or developed, including one spring, 23 reservoirs, 11 miles of pipeline, two wells, 17 miles of fence, 14,500 acres of brush control without seeding and 5,000 acres of brush control with seeding to adaptable forage species. These range improvements are projected to result in an increase in livestock grazing use of 4,459 AUMs. These improvements would result in better livestock distribution and would provide additional forage to relieve grazing pressures in areas not in this WSA.

The season of use for all allotments and WSAs would be as shown in Table 7.

Vehicle use for livestock management and facility inspection and maintenance of 38.15 miles of fence would continue to be done using motorized vehicles.

Recreation Management Actions

Vehicle use would continue on the existing 96 miles of roads and 121 miles of ways. Current recreation use is estimated to be 300 visitor days per year. Most of this use is by motor vehicles on existing roads and ways.

Summary

Table 2 summarizes the projected management actions under each alternative. Table 3 summarizes the environmental consequences of each alternative.

3. Affected Environment

This section discusses only those activities or resources which influence the character of the study area, or that may be affected by the alternatives.

Wilderness Values

Naturalness

All six WSAs exhibit a high degree of naturalness, with much of the study areas devoid of unnatural features. Most of the developments are unobtrusive because they are small and usually screened by either topography or vegetation.

The type and number of developments within each WSA and the percentage of WSA land that is influenced by these features is shown in Table 4. The majority of the developments in the Sheepshead Mountains WSA are in the northeastern part of the study area. However, there are seven reservoirs located in the southern end of the WSA. These reservoirs and some of the ways are generally minor disturbances and are screened by topography. Many of the ways in the rest of the WSA are visible from the higher terrain.

One access route (part road and part way) in the WSA leads to a horse trap site. There are no physical structures at the location. The site now has a minimal influence on the naturalness of the area, although the access route to the site is quite visible from the top of the Sheepshead ridgeline.

In the Wildcat Canyon WSA, the reservoirs are scattered throughout the study area, with the heaviest concentration on the western side. The reservoirs are generally small and screened by topography. The ways are also generally screened by topography, but in the eastern part of the WSA several ways are located within broad, shallow valleys and are visible from the surrounding area.

The reservoirs and ways in Heath Lake WSA are small, but frequently visible from the surrounding higher terrain. The fences are relatively unnoticeable.

In the Table Mountain WSA, ways are the primary influence on naturalness of the area. The ways frequently follow the base of the escarpments and are visible from the surrounding higher terrain, making the ways visible from a greater distance. The water developments are generally small and inconspicuous; however, some are easily viewed from surrounding higher terrain. The water developments in the southwestern corner are the most visible because they are located at the base of a broad, open slope.

In the West Peak WSA, unnatural developments have a very slight influence. They are generally minor disturbances and screened by topography.

Roads and ways have the greatest influence in Palomino Hills WSA and are generally concentrated in the northern half of the WSA. Seven borrow pits are also located here. Ten reservoirs, scattered throughout the WSA, are well screened by topography.

Developments in the Sulphur Springs area are scattered throughout the area. They are generally small, but can sometimes be viewed from the higher elevations.

The primary sources of outside sights and sounds for these WSAs are the boundary roads. State Highway 78 affects the northern part of Sheepshead Mountains WSA and the entire northern side of Palomino Hills WSA. In Palomino Hills WSA, the highway's influence extends well inside the WSA, to ridges and hilltops over a mile away.

In Heath Lake and West Peak WSAs, the area west of the main ridge is influenced by the Folly Farm to Fields county road and the ranching activities at Juniper and Mann Lake Ranches. The other WSAs are not substantially influenced by outside sights and sounds.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

Each of the six WSAs is large enough to allow dispersed use and provide outstanding opportunities for solitude. The primary screening factor within each WSA is topography.

Excellent topographic screening exists in nearly half of the Sheepshead Mountains WSA and opportunities for solitude are outstanding. The major topographic feature is the Sheepshead ridge running north-south through the center of the study area. In the south and west, rolling hills and small drainages add to the topographic diversity and enhance opportunities for solitude. The northern and southeastern areas are relatively flat and have few opportunities for solitude.

Opportunities for solitude are outstanding in the western, central and southern parts of the Wildcat Canyon WSA because of the topographic screening provided by rimrocks and the canyons of Wildcat, Mickey and Bone Creeks. The remainder of the area consists primarily of rolling hills that provide slight topographic screening.

In Heath Lake WSA, opportunities for solitude are outstanding. The hills, buttes, and ridges in the northeastern and southeastern portions of the study area provide moderate amounts of topographic screening and enhance opportunities for solitude.

Opportunities for solitude in the Table Mountain WSA are outstanding due to the excellent topographic screening throughout the area. Table Mountain, Mickey Butte and the other steep escarpments provide topographic diversity and enhance the opportunities for solitude. The Mickey Basin area does not contain much topographic screening, but tall shrubs provide vegetative screening.

The West Peak WSA has outstanding opportunities for solitude. The main ridgeline, the peak and the small hills and buttes on the east side of the WSA provide sufficient screening to enhance opportunities for solitude.

Opportunities for solitude in the Palomino Hills WSA are also outstanding. The western two-thirds contains most of the topographic screening. The drainages of Palomino, Antelope and Johnny Creeks, as well as the relief of Saddle Butte Lava Field, enhance the opportunities for solitude.

The Sulphur Springs area does not provide outstanding opportunities for solitude. With the exception of the ridgeline (Coffin Butte) which runs along its eastern side there is little topographic diversity or screening to enhance solitude.

Military jet aircraft use the Sheepshead Mountains Group area frequently for low altitude training flights. The influence of these flights on a visitor's perception of solitude and, to some degree, naturalness, is extreme for a short period of time (one minute or less), but it is also quite temporary. These flights do not have a long lasting, adverse effect on a visitor's opportunity to find solitude.

The six study areas provide excellent opportunities for primitive and unconfined types of recreation. The major drainages and ridges provide a number of day hiking, backpacking and horseback riding routes that vary greatly in distance and difficulty. Campsites along these routes are abundant, but the availability and quality of water is a problem and would be a limiting factor. Interesting geological formations and panoramic desert vistas provide opportunities for sightseeing and photography.

Good opportunities for day hiking, backpacking, camping and sightseeing occur throughout the Sheepshead Mountains WSA. Primary attractions would be Steens Mountain and the Alvord Desert as viewed from the Sheepshead ridge and the challenging hiking provided by the ridge and the Heath Creek drainage.

In Wildcat Canyon WSA, the opportunities for hiking, backpacking, camping and sightseeing are good. Most day hiking and backpacking would occur in the scenic and rugged Mickey, Bone and Wildcat Canyons. Scenic views of the Alvord Desert and Steens Mountain are also available.

The best opportunity for primitive recreation in the Heath Lake WSA is sightseeing. Scenic vistas of the surrounding area include Steens Mountain and Sheepshead Mountains. These views are excellent and show the expansive and open nature of this area. Day hiking and backpacking opportunities are available but are only of moderate quality.

Table Mountain WSA has good opportunities for a variety of primitive recreational activities, including day hiking, backpacking, camping, horseback riding and sightseeing. Due to the topographic diversity in the area, there are many interesting and challenging areas to hike. The Mickey Basin area would be attractive to those wanting an easy but interesting hike. Mickey Butte, in the southwestern corner, Table Mountain and the other escarpments around it would provide a longer, more challenging hike. Horseback riding is also good, with the existing vehicle ways providing routes through some of the steeper areas. Broad vistas of the Steens Mountain, Trout Creek and Pueblo Mountains and the Alvord Desert are available from the many high points and offer good opportunities for sightseeing and photography.

There are good opportunities in the West Peak WSA, for day hiking and sightseeing. The main north/south ridgeline with its east-facing escarpment offers a variety of challenges for hikers. Spectacular views of Steens Mountain, Sheepshead Mountains and Alvord Desert offer excellent opportunities for photography and sightseeing.

Palomino Hills WSA contains opportunities for day hiking, backpacking, horseback riding and sightseeing, but they are only of moderate quality. Few unique or attractive areas exist in this WSA, but the Saddle Butte Lava Field and drainages of Palomino, Antelope and Johnny Creeks would be of interest for some users.

Opportunities for day hiking and sightseeing are available within the Sulphur Springs area but these are only of moderate quality.

Special Features

The west face of Sheepshead Mountains in the Sheepshead Mountains WSA is one of a series of steep fault scarps which form the basin and range topography of much of southeastern Oregon.

Uncommon vegetation, wildlife and outstanding scenic quality are special wilderness features in some areas.

Plant species of special interest grow in four of the six WSAs. (See the Vegetation section for more information on these plants.)

The entire area is habitat for kit fox, which is on ODFW's list of threatened species, but the best habitat is in the southern end of Palomino Hills WSA and Wildcat Canyon WSA.

ODFW has also identified Sheepshead Mountains WSA and Table Mountain WSA as potential habitat for bighorn sheep, which were once native to the area.

Scenic quality is a special wilderness feature of Heath Lake WSA and West Peak WSA. The areas west of the main ridgeline have outstanding scenic quality. The view in these areas is west to the top of Steens Mountain and includes Mann Lake, Juniper Lake and other lakes. This view features high quality and contrasting visual characteristics.

Diversity in National Wilderness Preservation System (NWPS)

According to the Bailey-Kuchler System of classifying ecosystems, all six WSAs are in the Intermountain Sagebrush Province. The potential natural vegetation of these WSAs is sagebrush-steppe and the Sulphur Springs area is sagebrush-steppe. Distributed throughout the Wildcat Canyon, Table Mountain, West Peak and Palomino Hills WSAs and the Sulphur Springs area are small islands of saltbush-greasewood communities.

Vegetation communities listed in the Oregon Natural Heritage Plan and found in each of the WSAs are listed in Table 5. Communities in the Palomino Hills WSA are listed in the Owyhee Uplands section of the plan. Communities in the other WSAs and the Sulphur Springs area are listed in the Basin and Range section of the plan.

The WSAs are within five hours' driving time of one standard metropolitan statistical area with a population over 100,000: Boise, Idaho.

Energy and Mineral Development

The geology, energy and mineral resources of the six WSAs were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, correlating rock units in the WSA with similar environments in areas known to contain mineral resources. Technical details of the evaluation are in a mineral resources assessment report prepared by TERRADATA (a consulting firm under contract with BLM) titled "Assessment of Geology, Energy and Mineral Resources of the Sheepshead Mountains Geologic Resource Area," report No. OR-023-18, and in a BLM report on the assessment of mineral resources in the South Harney geologic resource area (GRA).

The Sheepshead Mountains Group is within the South Harney GRA which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level). A description of the rating system is provided in the Statewide EIS volume.

Table 6 shows the mineral potential classifications in the six WSAs and the Sulphur Springs area. Map 5 shows wherein the WSA energy and mineral resources have moderate or high potential for occurrence.

Surface rocks consist predominantly of Tertiary volcanics, and Tertiary and younger volcaniclastic sediments. The volcanic rocks are mainly basalts and andesites which occur as numerous thin flows and a cumulative thickness of several hundred feet. Interlayers of tuffs and tuffaceous sediments are present. This volcanic sequence is correlative to the Steens basalt, and may partially correlate with the Steens Mountain Volcanic Series as well.

Sedimentary deposits are mostly volcanically-derived lake deposits, fluvial deposits, alluvium and colluvium. These are generally unconsolidated Quaternary deposits.

Energy Resources

The entire area of all six WSAs is considered to have a moderate potential for oil and gas. This is based on the assumption that the Paleozoic marine boundary lies east of these WSAs, and thus there is the possibility of oil-bearing marine sediments at depth. As of October 16, 1987, none of the WSAs have oil and gas leases.

The southern portions of the Table Mountain WSA and West Peak WSA have a high potential for geothermal resources. These areas are within or adjacent to the Alvord KGRA. Following legal subdivisions, the KGRA covers all of the Mickey Basin and most of the high ridges and escarpments within the southwestern portion of the Table Mountain study area. Available data indicate that the Mickey Basin area has potential for generating up to 160 megawatts of electricity from geothermal steam.

The remainder of West Peak WSA, part of Table Mountain WSA, and part of Wildcat Canyon WSA are considered to have a moderate potential for geothermal resources. In the West Peak WSA, there was one geothermal lease covering 360 acres, and there were two geothermal leases covering 2,340 acres within the Table Mountain WSA, as of October 16, 1987. The other four WSAs are considered to have low potential for occurrence for geothermal resources and none of them had geothermal leases as of October 16, 1987.

Mineral Resources

Parts of the Sheepshead Mountains, Wildcat Canyon, Heath Lake, Table Mountain and West Peak WSAs have a moderate potential for the occurrence of gold, silver, copper and mercury.

Silver, copper and mercury are strategic and critical mineral commodities; but there are no known strategic and critical mineral deposits within these WSAs. As of October 16, 1987, there were no mining claims in any of these study areas.

Diatomite has moderate potential for occurrence in portions of all six WSAs. Diatomite occurs in tuffaceous lacustrine (lake) sediments in this area.

Parts of the Sheepshead Mountains WSA and Palomino Hills WSA have a moderate potential for the occurrence of zeolites. The potential for this resource is low in the remainder of the study areas.

Pre-Tertiary or basement rocks have not been found within these WSAs. There is only minimal data available on the subsurface geology and the deep subsurface has not been explored.

Vegetation

Vegetation communities in the Sheepshead Mountains Group varies from those associated with alkaline basins and playas to those on the steep, rocky slopes and tops of the Sheepshead Mountains.

The most extensive community over the whole area is big sagebrush/bluebunch wheatgrass. It occurs on the gently-rolling uplands and on the steep slopes throughout the WSAs. Species currently present in this community include Thurber's needlegrass, Sandberg's bluegrass, cheatgrass, rabbitbrush and big sagebrush. Spiny hopsage grows in the lower elevation fans of this community. Bluebunch wheatgrass occurs on the steeper slopes and on the uplands at the highest elevations.

In Palomino Hills WSA, bluebunch wheatgrass is a dominant species on the area of recent lava flows, known as Saddle Butte Lava Fields, in the northern part of the study area. West Peak WSA contains one small north slope which is dominated by three-tip sagebrush. This is the only occurrence of three-tip sagebrush in the six WSAs.

The estimated ecological status on the flat to gently rolling areas is mid-seral.

Late seral communities are found on the steep, rocky slopes. The primary species in the potential natural community is bluebunch wheatgrass. Big sagebrush is a minor component.

A shadscale-Indian ricegrass community is one other community common in the area, and occurs in four of the six WSAs and in the Sulphur Springs area. The community is located on rocky fans and slopes above the alkaline flats in the southern end of Table Mountain WSA, on the alluvial fans north of Wildcat Creek in the southern part of Wildcat Canyon WSA, in the eastern part of West Peak WSA, on the fans in the southern and eastern portion of Palomino Hills WSA and on fans above the playa in the Sulphur Springs area.

The grass species which occur in these areas are bottlebrush squirreltail, Sandberg's bluegrass, Thurber's needlegrass and cheatgrass. Shrub species include shadscale, budsage, spiny hopsage, rabbitbrush, horsebrush and big sagebrush. The estimated ecological status is early to mid-seral. The potential natural community contains Indian ricegrass and shadscale as the primary species, and budsage and bottlebrush squirreltail as secondary species.

The remaining vegetation communities occur in no more than three of the study areas and are generally minor in extent. They include low sagebrush/ bunchgrass/ silver sagebrush community, Great Basin wildrye community, playa margin communities, saline meadows and a winterfat community.

Low sagebrush communities occur in Sheepshead Mountains, Palomino Hills and Wildcat Canyon WSAs. This community is found associated with the shallow rocky soils in the northwest corner of Wildcat Canyon WSA, the southeast corner of Sheepshead Mountains WSA and in an area which lies between the Saddle Butte Lava Flows and the north ridge of the Sheepshead Mountains in the Palomino Hills and Sheepshead Mountains WSAs. These areas currently contain low sagebrush, bluebunch wheatgrass, Sandberg's bluegrass, bottlebrush squirreltail, cheatgrass, phlox and goldenweed. The estimated ecological status of the low sagebrush communities is late seral. The potential natural community contains bluebunch wheatgrass and low sagebrush. Sandberg's bluegrass replaces bluebunch wheatgrass where the soil is very shallow and rocky.

Silver sagebrush communities occur in three of the WSAs. The largest of these communities is at Folly Farm Flat in Sheepshead Mountains WSA. Silver sagebrush communities also occur in the Sunrise Valley and Opal Valley areas of this WSA. Small communities occur in the Dry Lake area on the border between Sheepshead Mountains WSA and Palomino Hills WSA, and in the northern end of Heath Lake WSA along its border with Sheepshead Mountains WSA. Species currently growing in this community include cheatgrass, creeping wildrye, giant wildrye, big sagebrush and silver sagebrush. The estimated ecological status is early to mid-seral. The potential natural community is silver sagebrush, creeping wildrye and mat muhly.

Playa margin communities occur in Table Mountain WSA, West Peak WSA and in the Sulphur Springs area. Greasewood and saltgrass occur extensively throughout the Mickey Basin area in Table Mountain WSA. Greasewood is also present in the playa near Sulphur Springs and in West Peak WSA. Greasewood occurs in conjunction with big sagebrush on the eroded alkaline fans around the basins. Bottlebrush squirreltail, ryegrass and cheatgrass grow in the big sagebrush-greasewood areas. The estimated ecological status of the greasewood communities is early seral. The potential natural community species in the basins are inland saltgrass, alkali sacaton and greasewood. Indian ricegrass, big sagebrush and greasewood are the potential natural community on the alluvial fans.

In Table Mountain WSA, small meadows dominated by saltgrass and rushes occur on the margins of the playas and near springs. Great Basin wildrye and greasewood may also occur in these areas. The estimated ecological status is mid-seral. The potential natural community includes Lemon alkali grass, alkali bluegrass, inland saltgrass, rushes and sedges.

The Great Basin wildrye community is minor in extent and is associated with the alluvial fans around Heath Lake and South Lake in the Heath Lake WSA and the Sulphur Springs area. The current vegetation is mostly big sagebrush and annual forbs and grasses. The estimated ecological status is early seral. The primary potential natural community species is Great Basin wildrye. Secondary species are big sagebrush and sod bluegrasses.

There are small winterfat communities on the upper margins of the basins in Table Mountain WSA. The estimated ecological status is early to mid-seral. The potential natural community species are primarily winterfat, Nuttal's saltbush, Indian rice grass, creeping wildrye and squirreltail.

Five plant species of special interest (mentioned in the Special Features section) occur in four of the WSAs. Three of these plants are candidate species for Federal listing as threatened or endangered: *Astragalus solitarius* (weak milk-vetch), which occurs in Sheepshead Mountains WSA; *Lepidium davisii* (Davis' peppercress), which occurs in Palomino Hills WSA; and *Lupinus biddlei* (Biddle's lupine), which occurs in West Peak WSA. Two of these plant species of special interest are classified as State threatened, *Stipa speciosa* (desert needlegrass) and *Chaenactis macrantha* (large-flowered chaenactis), both occur in Table Mountain WSA and are on list 2 of the Oregon Natural Heritage Plan's "Rare, Threatened, and Endangered Plants and Animals of Oregon".

Wildlife

All of these WSAs have limited water sources, which has a strong influence on wildlife during the warmer months. Lack of perennial water and little vegetation variety limits the diversity and abundance of vegetative and animal species. Most of the wildlife are nongame species which inhabit the big sagebrush, low sagebrush and salt desert shrub habitats covering most of the area.

Coyotes, bobcats, black-tailed jackrabbits, least chipmunk, antelope ground squirrel, sage sparrow, Brewer's sparrow, horned lark and western rattlesnake are a few of the species found in the area. Raptors common to the area include golden eagle, prairie falcon and American kestrel, but numbers are low.

Kit fox, on the ODFW's list of Threatened Wildlife, may be found in the WSAs. This is the northernmost part of the kit fox range.

Chukars are found near water and rimrocks during most years, but chukars are not abundant in the WSAs. Sage grouse, a candidate for Federal listing as threatened or endangered, are found in the WSAs, but are not abundant. Hungarian partridge have been observed in the Palomino Hills and Sheepshead Mountains WSAs, but are uncommon.

The Sheepshead Mountains Group supports a winter population of 800 deer and 400 antelope and a summer population of 325 deer and 380 antelope. Although deer and antelope use the WSAs, their use is so light that they are not shown by ODFW as having winter or summer range and are not shown on the Special Features map.

Most of the deer use occurs when winter snow accumulates on Steens Mountain and deer move to the lower elevations in the WSAs. Most of the winter deer use occurs in the Sheepshead Mountains, Heath Lake, Table Mountain and West Peak WSAs. Summer deer use is limited by the lack of water, lack of thermal cover and poor forage. Most of the summer deer use is in the Sheepshead Mountains WSA.

Antelope are yearlong residents of the WSAs. Antelope numbers are usually low due to the lack of water, poor forage and unsuitable habitat due to large areas of big sagebrush or steep, rocky slopes. The northern portion of the Sheepshead Mountains WSA burned by wildfire in 1984. Following that, over 200 antelope were observed by ODFW on this burn area. Most of the summer and winter antelope use occurs in the Sheepshead Mountains WSA.

The ODFW has identified the Sheepshead Mountains as having excellent potential for the reestablishment of California bighorn sheep. They believe the Sheepshead Mountains WSA, the western part of the Wildcat Canyon WSA and the Table Mountain WSA have the best potential for bighorn habitat. California bighorn sheep is a candidate for Federal listing as threatened or endangered.

The Mickey Basin area in the Table Mountain WSA has an abundance of springs, seeps and wet meadows and contains species not found over most of the rest of this WSA. The Townsend pocket gopher, montane meadow mouse, common snipe and killdeer are common. The playa in the basin is occasionally flooded during the spring and is used by a few migrating shorebirds and waterfowl. Long-eared owls nest in buffaloberry found near springs in the basin. A large artesian well occurs in the north end of this basin.

Four exclosures around small riparian areas are located in the WSAs. The Bone Springs Exclosure (3 acres) occurs in the Wildcat Canyon WSA, the Rock Corral Exclosure (3 acres) and Bone Creek Reservoir Exclosure (3 acres) are found in the Palomino Hills WSA, and the Getty Spring Exclosure (18 acres) is found in the Table Mountain WSA. Each exclosure provides benefits to both game and nongame species.

The Sulphur Springs area has light use by deer and antelope during the winter. Extremely high water years may cause Tudor Lake to overflow into a playa near Sulphur Springs. Migrant waterfowl use this playa when flooding occurs.

Watershed

There are no perennial streams in the Sheepshead Mountains Group.

Livestock Grazing

Portions of five grazing allotments are within the six combined study areas in the Sheepshead Mountains Group. Table 7 shows the existing livestock use in the WSAs.

Existing range improvements are 21 springs, 100 reservoirs, four wells and 38 miles of fence.

Livestock operators use motor vehicles on 125 miles of ways and 96 miles of roads, approximately 10 times each per year to inspect and maintain range improvements, to manage livestock and to spread salt.

The amount of motor vehicle use by grazing operators varies among the study areas. Most vehicle use is for livestock management and includes livestock supervision, salting and hauling of water or horses. In the West Peak WSA, the boundary roads are used heavily by grazing operators, with no use within the study area. In the other five study areas and the Sulphur Springs area, the motor vehicle use is similar. The boundary roads are used heavily, while the interior roads and ways are used slightly to moderately. Livestock are managed primarily from horseback within the study areas.

Recreation Use

Recreation use in the Sheepshead Mountains Group is minimal. Game species which can be hunted are mule deer, antelope, sage grouse and chukar. However, due to water limitations, animal populations are low and widely scattered, resulting in poor quality hunting. Most of the hunting for deer within the Sheepshead Mountains Group occurs in the Table

Mountain WSA due to the greater availability of water in Mickey Basin. The best area for antelope hunting occurs in the Wildcat Canyon WSA. Sage grouse were last hunted in the fall of 1983, but it is not known how much actual hunting occurred. At the present time there is no season for these birds.

Hunters and other recreationists use vehicles for their primary access in the area on existing roads and ways.

These study areas currently receive little primitive recreation associated with day hiking, backpacking or sightseeing.

Local Personal Income

Livestock use at the current level of 8,613 AUMs and recreation use totaling 300 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $103,356 for livestock grazing and $3,600 related to recreation use of the WSA, for an overall total of $106,956. The Statewide EIS volume discusses the term local personal income and how income figures have been derived.

4. Environmental Consequences

Introduction

This section discusses the environmental consequences of implementing each of the alternatives. Resources and activities not significantly affected by any of the alternatives are not discussed. The Statewide volume discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness: 213,467 acres
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

All of the six WSAs would be designated wilderness, and wilderness values within the entire 213,467 acres would be protected by legislative mandate. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. Special features, including outstanding scenic qualities, five plant species of special interest, kit fox habitat, potential bighorn sheep habitat and raptor nesting areas would be protected.

Under this alternative, 121 miles of ways would be closed. The 96 miles of roads would remain open. The all wilderness alternative would add six separate wilderness areas totaling 213,467 acres to the National Wilderness Preservation System (NWPS): 54,390 acres in the Sheepshead Mountains WSA, 34,830 acres in the Wildcat Canyon WSA, 20,520 acres in the Heath Lake WSA, 40,592 acres in the Table Mountain WSA, 8,535 acres in the West Peak WSA and 54,600 acres in the Palomino Hills WSA.

Naturalness

The naturalness of the areas' steep-faced ridgelines, plateaus, rolling hills, broad and gentle fans, low basins and playa lakebeds would be enhanced by the closure of 121 miles of ways. This closure would allow the ways to revegetate naturally and return to an unbroken sagebrush and grass landscape.

Heavy equipment would utilize the 121 miles of closed ways to maintain 21 springs and 97 reservoirs every 10 years and four wells every 2 years. This infrequent amount of use would not prevent the ways from revegetating.

Solitude

Opportunities for solitude provided by the steep ridgelines, deep-cut dry canyons and rolling hills would improve slightly with the closure of 121 miles of ways and a reduction in vehicle use.

Heavy equipment used to maintain 21 springs and 97 reservoirs once every 10 years and four wells once every 2 years would cause minor local impairment to solitude.

Primitive and Unconfined Recreation

Closure of 121 miles of ways to motorized vehicles use would increase the area available for participating in primitive and unconfined recreation activities such as day hiking, backpacking, camping, horseback riding and sightseeing within the six study areas. The quality of these activities would improve with the closure and natural revegetation of ways. A more natural, primitive and wild setting would be provided.

Special Features

Eliminating motorized vehicle use on the 121 miles of ways would reduce the influence on the areas' special features. These influences include impairment of scenic vistas and minor seasonal disturbance to wildlife that inhabit these study areas.

Conclusion: Wilderness designation of the entire 213,467 acres within the six WSAs would result in the protection and enhancement of the existing wilderness values.

Impacts on Energy and Mineral Development

Wilderness designation would close a total of 201,000 acres within the WSA to mineral exploration and development. A total of 40 acres of private land and 12,467 acres of split-estate would remain open to mineral exploration and development.

Energy Development

Energy exploration and development would be precluded on a total of 201,000 acres within the six WSAs. Acreage with a high or moderate potential for geothermal resources is limited to three WSAs within the Sheepshead Mountains Group, Table Mountain WSA, West Peak WSA and Wildcat Canyon WSA.

Energy exploration could occur on the split-estate and private lands within the WSA. A 10-megawatt geothermal power plant, projected on public land in the southern area of Table Mountain WSA, would be precluded under wilderness designation.

Conclusion: Wilderness designation would result in foregone energy production from one projected 10-megawatt geothermal power plant within the Table Mountain WSA.

Mineral Development

Within the WSA, substantial exploration or mineral development is not projected due to the lack of direct geological evidence for mineral resources. Low interest in the area, as shown by a lack of mining claims and plans of operations filed for exploration, and no known deposits of sufficiently large ore bodies, indicate that mineral development is unlikely on public and private lands within the boundaries of the WSAs. Projected casual mineral exploration would occur on 12,507 acres of split-estate and private lands.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

The Sheepshead Mountains Group's vegetative composition, as described in the Vegetation section of the Affected Environment, would not substantially change since grazing would continue at its present level, nor would the ecological status, which is in the mid-seral stage overall.

The 121 miles of existing ways, once closed to vehicle use, would naturally revegetate with annual forbs and grasses within approximately two growing seasons. Sagebrush would become established in these ways within five years.

The designated wilderness would not be subject to surface-disturbing activities. Vegetation dependent upon the existing, undeveloped environment would thus be maintained.

Conclusion: The 121 miles of ways, totaling approximately 120 acres, would naturally revegetate. Overall vegetation would remain unchanged.

Impacts on Wildlife

Wildlife habitat for a summer population of 325 deer and 380 antelope and a winter population of 800 deer and 400 antelope would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives.

The proposed 1,000 acres of grass and four-wing saltbush seeding in the Heath Lake WSA would not be allowed. Benefits to stabilize eroding soil and provide forage and cover for wildlife would be foregone. Construction of four dikes to create 20 acres of wetlands in the Table Mountain WSA would not be allowed and benefits to aquatic birds would be foregone. The construction of three guzzlers in the Wildcat Canyon WSA and two guzzlers in the Palomino Hills WSA would not be allowed. Benefits to nongame species and game species would be foregone. California bighorn sheep would be reintroduced in the Sheepshead Mountains with an expected population increase to 200 bighorns over the long term. The proposed additional water developments could be important in establishing bighorn sheep into the Sheepshead Mountains Group. Proposed guzzlers and livestock water developments would not be allowed, possibly reducing the chances of establishing bighorns in the area.

The closure of 121 miles of ways would have a slight impact on game species and a negligible impact on other wildlife due to the light vehicle use that currently occurs.

Access to the Bone Springs Exclosure in the Wildcat Canyon WSA and the Rock Corral Exclosure and Bone Creek Exclosure in the Palomino Hills WSA would require a short hike from the roads which would remain open. Maintenance of the Getty Springs Exclosure in the Table Mountain WSA would be abandoned due to difficult access resulting from the closure of ways. Failure to maintain this fence would allow cattle and wild horses to graze an area where formerly there was no use. Cover and forage for wildlife would be reduced over 30 acres.

Conclusion: Wildlife habitat and populations would be maintained on 213,467 acres designated wilderness. Bighorn sheep would be reintroduced. Precluded seeding, guzzler and wetland projects would result in foregone improvement of antelope, bighorn sheep, aquatic birds and nongame species' habitat on 1,020 acres.

Impacts on Horse Trap Access

Another horse trap site would have to be located outside the WSA since the last 4 miles of access to the Heath Creek horse trap would be closed. This would increase the time, manpower and cost of gathering excess wild horses.

Conclusion: Closure of the 4 miles of way would make the horse trap inaccessible to motorized vehicles, thus increasing the time, manpower and cost of gathering excess wild horses.

Impacts on Livestock Grazing

Livestock grazing in the Sheepshead Mountains Group WSAs and within portions of five allotments would remain at the current estimated level of 8,613 AUMs which includes 207 AUMs of temporary nonrenewable use. This temporary use is in the Alvord allotment and involves the Wildcat Canyon WSA (27 AUMs) and Table Mountain WSA (180 AUMs) WSA. This use could become permanent depending upon the results of monitoring. Wilderness designation would preclude the allocation of an additional 4,420 AUMs of currently available but unallocated forage because of the potential adverse impacts upon wilderness values (e.g. reduction in ground cover and trampling by livestock).

No new range improvements would be constructed; therefore, projected increases in livestock grazing that would be realized from these projects, would be foregone.

Vehicle use for livestock management and facility inspection and maintenance of 38 miles of fence on 121 miles of ways would be precluded. Fence inspection and maintenance would be done on foot or by the use of riding or pack animals. This would result in an inconvenience and additional expense to livestock operators. Mechanized heavy equipment would be used on an average of once every 10 years to maintain 97 reservoirs and 21 springs and every 2 years for four wells.

Conclusion: Livestock grazing use would remain at the current level of 8,613 AUMs of total use. There would be an inconvenience and additional expense to livestock operators due to closing of the 121 miles of ways.

Impacts on Recreation Use

Except for the 96 miles of roads that would remain open under this alternative, the entire 213,467 acres of the Sheepshead Mountains Group WSAs would be closed to motorized recreation, involving 121 miles of existing ways.

Primitive recreation opportunities would increase in the areas surrounding the 121 miles of ways which would be closed, but not sufficiently to offset a reduction in vehicle-oriented use. Some vehicle-oriented recreation is expected to be displaced into other areas, but the majority of this use will still continue to utilize the 96 miles of open roads including open WSA boundary roads.

Conclusion: Wilderness designation would result in a net reduction in the areas' current recreation use level of 300 visitor days per year to 200 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 8,613 AUMs. Overall recreation use would decrease by 100 visitor days per year.

Table 8 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $1,200 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $1,000.

Enhanced Wilderness

Recommended suitable for wilderness: 231,447 acres (assuming acquisition of 1,580 acres of private land and incorporation of 16,400 acres in the Sulphur Springs area)

Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

The enhanced wilderness alternative would add 231,447 acres to the NWPS, with incorporation of adjacent public lands, acquisition of the 1,580 acres of private land and the acquisition of the mineral estate on 13,667 acres of split-estate lands. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved over the entire area. Special features (including outstanding scenic values, three plant species of special interest, kit fox habitat and potential bighorn sheep habitat) would be protected.

Under this alternative, 125 miles of ways and 26 miles of dead-end roads and 70 miles of boundary roads (totaling 96 miles) would be closed.

Naturalness

The naturalness of the areas' steep-faced ridgelines, plateaus, rolling hills, broad and gentle fans, low basins and playa lakebeds would be enhanced by the closure of 125 miles of ways and 96 miles of roads (26 miles of dead-end roads and 70 miles of boundary roads). This closure would allow the ways and roads to naturally revegetate and return to an unbroken sagebrush and grass landscape.

Heavy equipment would utilize the 125 miles of ways and 96 miles of roads to maintain 21 springs and 106 reservoirs every 10 years and six wells every two years. This infrequent amount of use would not prevent the roads and ways from revegetating.

Solitude

Opportunities for solitude provided by the steep ridgelines, deep-cut dry canyons and rolling hills would improve slightly with the closure of 125 miles of ways, 26 miles of dead-end roads and 70 miles of boundary roads (totaling 96 miles) and a reduction in vehicle use.

Heavy equipment used to maintain 21 springs and 106 reservoirs once every 10 years and six wells once every 2 years would cause minor local impairment of solitude.

Primitive and Unconfined Recreation

Under the enhanced wilderness alternative, opportunities for primitive recreation would be maintained or improved. Closure of 125 miles of ways, 26 miles of dead-end roads and 70 miles of boundary roads to motorized vehicle use would create a large core area and increase the area available for participating in primitive and unconfined recreation activities such as day hiking, backpacking, camping, horseback riding and sightseeing within the six study areas without interruption from motorized vehicles. The quality of these activities would improve with the closure and natural revegetation of ways. A more natural, primitive and wild setting would be provided.

Special Features

Eliminating motorized vehicle use on the 96 miles of roads (26 miles of dead-end roads and 70 miles of boundary roads), in addition to the 125 miles of ways, would reduce the influences on special features. These influences include impairment of scenic vistas and minor seasonal disturbance to wildlife that inhabit these study areas.

Conclusion: Wilderness designation of the 231,447 acres would result in the protection and enhancement of existing wilderness values.

Impacts on Energy and Mineral Development

Under the enhanced wilderness alternative, 216,200 acres of public land and an additional 15,247 acres of private land and mineral estate proposed for acquisition, would be withdrawn from mineral entry.

Energy Development

Energy exploration and development would be precluded on the entire acreage of the area identified under the enhanced alternative. This includes the six WSAs of the Sheepshead Mountains Group as well as 16,400 acres of public land in the Sulphur Springs area. Upon acquisition of split-estate and private land, a total 231,447 acres would be withdrawn from mineral entry.

The 10-megawatt geothermal power plant projected in the southern area of Table Mountain WSA would be precluded under wilderness designation.

Conclusion: Wilderness designation would result in foregone production from one projected 10-megawatt geothermal power plant in the Table Mountain WSA.

Mineral Development

Projected casual mineral exploration would be precluded on 231,447 acres. Substantial exploration or mineral development is not projected due to the lack of direct geological evidence for mineral resources. Low interest in the area, as shown by a lack of mining claims and plans of operations filed for exploration, and no known deposits of sufficiently large ore bodies, indicates that mineral development is unlikely on lands within the suitable boundary.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

The Sheepshead Mountains Group's vegetative composition, as described in the Vegetation section of the Affected Environment, would not substantially change, nor would the ecological status which is in the mid-seral stage overall.

The 125 miles of ways, 26 miles of dead-end roads and 70 miles of boundary roads (totaling 96 miles or approximately 320 acres), once closed to vehicle use, would naturally revegetate with annual forbs and grasses within approximately two growing seasons. Sagebrush would become established in the ways and roads within five years.

The 231,447 acres designated wilderness would not be subject to surface disturbing activities. Vegetation dependent upon the existing, undeveloped environment would thus be maintained.

Conclusion: Overall vegetation would remain unchanged. Approximately 320 acres would naturally revegetate.

Impacts on Wildlife

Wildlife habitat for a summer population of 325 deer and 380 antelope and a winter population of 800 deer and 400 antelope would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives.

The proposed 1,000 acres of grass and four-wing saltbush seeding in the Heath Lake WSA would not be allowed. Benefits to stabilize eroding soil and provide forage and cover for wildlife would be foregone. Construction of four dikes to create 20 acres of wetlands in the Table Mountain WSA would not be allowed and benefits to aquatic birds foregone. The construction of three guzzlers in the Wildcat Canyon WSA and two guzzlers in the Palomino Hills WSA would not be allowed, resulting in foregone benefits to nongame species and game species. California bighorn sheep would be reintroduced in the Sheepshead Mountains with an expected population increase to 200 bighorns over the long term. The proposed additional water developments could be important in establishing bighorn sheep into the Sheepshead Mountains. Proposed guzzlers and livestock water developments would not be allowed, possibly reducing the chances of establishing bighorns in the area.

The closure of 125 miles of ways, 26 miles of dead-end roads and 70 miles of boundary roads totaling 96 miles, would have a slight impact on game species and a negligible impact on other wildlife due to the light vehicle use that occurs.

Access for maintenance of the Bone Springs Exclosure in the Wildcat Canyon WSA and the Rock Corral Exclosure and the Bone Creek Reservoir in Palomino Hills WSA would be on horseback, making maintenance difficult. Maintenance needs would be determined annually by using aircraft. If maintenance was needed, the Gerry Springs Exclosure in the Table Mountain WSA would be abandoned due to difficult access resulting from the closure of ways and roads. Failure to maintain this fence would allow cattle and wild horses to graze on areas where formerly there was no use. Cover and forage for wildlife would be reduced over 18 acres.

Private lands proposed for acquisition contain water sources heavily used by wildlife. Many of these tracts have springs on them. The tract near Mickey Cabin in the Table Mountain WSA contains a small artesian well.

Conclusion: Wildlife habitat and populations would be maintained on 231,447 acres designated wilderness. Bighorn sheep would be reintroduced. Precluded seeding, guzzler and wetland projects would result in foregone improvement of antelope, bighorn sheep, aquatic birds and nongame species' habitats on 1,020 acres.

Impacts on Horse Trap Access

Another horse trap site would have to be located outside the WSA since the entire access route to the

Heath Creek horse trap would be closed. This would increase the time, manpower and cost of gathering excess wild horses.

Conclusion: Closure of the entire 10-mile access route would make the horse trap inaccessible to motorized vehicles, thus increasing the time, manpower and cost of gathering excess wild horses.

Impacts on Livestock Grazing

Livestock grazing in the Sheepshead Mountains Group and within portions of five allotments would remain at the current estimated level of 9,447 AUMs, which includes 329 AUMs of temporary nonrenewable use. This temporary use is in the Alvord allotment and involves the Wildcat Canyon (27 AUMs) and Table Mountain (180 AUMs) WSAs, and the Sulphur Springs (122 AUMs) area and could become permanent depending upon the results of monitoring. Wilderness designation would preclude the allocation of an additional 4,420 AUMs of currently available but unallocated forage because of the potential adverse impacts on wilderness values (e.g. reduction in residual ground cover and trampling by livestock).

No new range improvements would be constructed, and therefore, projected increases in livestock grazing in the WSAs would be foregone.

Vehicle use for livestock management and facility inspection and maintenance of 39 miles of fence on 125 miles of ways and 96 miles of roads (26 miles of dead-end roads and 70 miles of boundary roads) would be precluded. Fence inspection and maintenance would be done on foot or by the use of riding or pack animals. Precluded vehicle use of the boundary roads for routine livestock management activities would result in a major inconvenience and considerable additional expense to livestock operators. Mechanized heavy equipment would be used on the average of once every 10 years to maintain 106 reservoirs and 21 springs and every 2 years for six wells.

Conclusion: Livestock grazing use would remain at the current level of 9,447 AUMs of total use in the WSA and the Sulphur Springs area. There would be a major inconvenience and considerable additional expense to livestock operators due to closing of the boundary roads.

Impacts on Recreation Use

Motorized vehicle use would be precluded on 231,447 acres (assuming acquisition of I,580 acres of private land), including 96 miles of roads and 125 miles of ways. This closure would eliminate all motorized vehicle use in the area. The recreation activities that would be most affected include deer hunting in the Table Mountain WSA and antelope hunting in the Wildcat Canyon WSA.

Recreation use would decline from 300 visitor days per year to 100 visitor days per year.

The quality of primitive recreation opportunities is expected to improve with the elimination of motorized vehicles within the WSAs. Any expected increase in primitive recreation use would not be sufficient to offset the reduction in vehicle-oriented recreation.

Conclusion: Wilderness designation would result in a reduction in the areas' overall recreation use, from the level of 300 visitor days per year to 100 visitor days per year.

Impacts on Local Income

Livestock grazing would remain at 9,447 AUMs. Overall recreation use would decrease by 200 visitor days per year. Table 8 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $2,400 per year.

Based on economic information supplied by ranchers in the area, the closure of roads would cost livestock operators an estimated $2,200 annually. As this operator-cost represents income to others in the local area, net local personal income would not be affected.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $2,000.

Proposed Action

Recommended suitable for wilderness: 106,155 acres (assuming acquisition of 435 acres of private land)
Recommended nonsuitable for wilderness: 107,747 acres

Impacts on Wilderness Values

The proposed action would add 106,155 acres to the NWPS, including acquisition of 435 acres of private land and the mineral estate of 5,340 acres of split-estate land. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved in the portions of the WSAs recommended suitable. Special features, including outstanding scenic qualities, five plant species of special interest, kit fox habitat and potential bighorn sheep habitat would be protected.

Wilderness values on the 107,747 acres recommended nonsuitable, including those associated with the special features in this portion of the Sheepshead Mountains Group (all of Heath Lake WSA, West Peak WSA and Palomino Hills WSA, and portions of Sheepshead Mountains WSA and Table Mountain WSA), such as kit fox habitat, outstanding scenic qualities and bighorn sheep habitat, would not be protected. These wilderness values would be subject to disturbance from development of other resources, including energy development and range and wildlife improvements.

Under this alternative, 63 miles of ways and 9.75 miles of dead-end roads located in the area recommended suitable would be closed. The remaining 58 miles of ways and 60.5 miles of roads located in the area recommended nonsuitable would remain open.

Naturalness

The naturalness of the northern portion of the Sheepshead Mountains Group, which includes steep-faced ridgelines, plateaus, rolling hills, broad and gentle fans and low basins would be slightly enhanced by the closure of 63 miles of ways and 9.75 miles of dead-end roads. This closure would allow these roads and ways to naturally revegetate and return to a sagebrush and grass landscape. The 10 miles of road and way to the Heath Creek horse trap would remain open for access when wild horses are periodically gathered.

Heavy equipment would utilize 63 miles of ways and 9.75 miles of dead-end roads to maintain 15 springs and 78 reservoirs every 10 years. This infrequent amount of use would not prevent the ways and roads from revegetating.

In the portion of the Sheepshead Mountains Group recommended nonsuitable, continued vehicle use on the 58 miles of ways and 60.5 miles of roads would maintain the visual impact of vehicle tracks on naturalness on approximately 20,684 acres of these WSAs.

Projected energy exploration and development, including one 10-megawatt geothermal power plant and 2.5 miles of roads and transmission lines, would directly affect naturalness on 40 acres and visually influence an additional 3,500 acres.

The projected range improvements consist of nine reservoirs, 5 miles of pipeline, one well, 9 miles of fence, 2,280 acres of brush control and 2,500 acres of brush control with seeding and the accompanying changes in grazing patterns would directly impair 4,813 acres and visually influence approximately 121,000 acres of naturalness.

Construction of the projected wildlife developments, including a 1,000-acre seeding, construction of four dikes to create a 20-acre wetland and construction of two wildlife guzzlers would directly impair wilderness values on 1,047 acres and would visually influence 25,600 acres of the area recommended nonsuitable.

The total area visually influenced by these projects would be approximately 107,000 acres. Some of these projects are grouped together and those in the same locations would visually influence some of the same acres.

Solitude

Opportunities for solitude provided by the steep-faced ridgelines and their drainages, the plateaus and rolling hills would slightly improve with the closure of 63 miles of existing ways and 9.75 miles of dead-end roads. The reduction in vehicle-oriented use, in the area recommended suitable would provide a core area for people to hike into and experience solitude with no disturbance from vehicles.

The use of the horse trap approximately every four years would impair opportunities for solitude during the time the road is maintained and during horse gathering operations. This influence would be short-term and of a local nature. Maintenance of the existing 78 reservoirs and 15 developed springs would require the use of heavy equipment approximately once every 10 years for each facility. This maintenance activity would cause minor local impairment of solitude.

In the area recommended nonsuitable, continued vehicle use on 60.5 miles of roads and 58 miles of ways, and human activity associated with vehicle use, energy exploration and development and projected range and wildlife improvements, would cause repeated impairment of solitude opportunities adjacent to these activities. Projected range improvements for this area include a 2,280-acre brush control project, a 2,500-acre brush control with seeding, nine reservoirs, 5 miles of pipeline, 9 miles of fence and one well. Projected wildlife habitat improvement projects include a 1,000-acre seeding, four dikes to create a 20-acre wetland and two wildlife guzzlers. Projected energy developments include construction and operation of a 10-megawatt geothermal power plant. Solitude opportunities in the rest of the area would remain unchanged.

Primitive and Unconfined Recreation

Use of the Heath Creek horse trap would cause short-term, localized impairment of primitive and unconfined recreation opportunities during the time of a gathering.

In the area recommended suitable, closure of 63 miles of existing ways and 9.75 miles of dead-end roads to motorized vehicle use would increase opportunities for participating in primitive and unconfined recreation activities such as hiking, sightseeing, hunting, photography, wildlife viewing, camping, backpacking, horseback riding and wildlife observation. The quality of these activities would improve with the elimination of motorized vehicle use and the revegetation of the ways. A more natural, primitive and wild setting would be provided in the area recommended suitable.

In the area recommended nonsuitable, opportunities to participate in primitive and unconfined recreation would be reduced by the development of the projected range and wildlife habitat improvements, projected energy development and continued vehicle use of the 60.5 miles of roads and 58 miles of ways. Such use would continue to intrude upon primitive, nonmotorized recreation opportunities in the vicinity of the roads and ways, as well as around projected developments.

Special Features

Eliminating motorized vehicle use on the 63 miles of existing ways and 9.75 miles of dead-end roads in the area recommended suitable would reduce their influence to the areas' special features. These influences include vehicle use impairing scenic vistas and causing minor seasonal disturbance to wildlife that inhabit the study area. The ways and roads traverse areas with populations of wildlife and also cross areas of scenic quality, resulting in a visual contrast not fully in harmony with the natural setting.

The special features associated with the area recommended nonsuitable would be subject to disturbance and impacts from projected development of other resources, including energy, range and wildlife developments. Monitoring and mitigation measures would reduce or eliminate possible impacts. Continued vehicle use of the 60.5 miles of the roads and 58 miles of ways that would remain open would maintain the impact on scenic vistas and minor seasonal disturbance to wildlife that inhabit this area.

Conclusion: Wilderness designation of the 105,720 acres would result in protection and enhancement of the existing wilderness values in the area. The 107,747 acres recommended nonsuitable would be subject to projected activities that would impair wilderness values over approximately 107,000 acres in the WSAs, with further declines from other potential uses over the long term.

Impact on Energy and Mineral Development

Under the proposed action, 100,380 acres of public land and the acquired 5,340 acres of split-estate land and 435 acres of private land would be withdrawn from mineral entry. The 107,747 acres of public land recommended nonsuitable would remain open to energy and mineral exploration and development.

Energy Development

Energy exploration and development would be precluded on a total of 106,155 acres within the suitable area identified under this alternative.

Due to a lack of sufficient geological evidence to support an extensive exploration/development program and the lack of a known developable deposit, no oil and gas development is projected.

No geothermal exploration or development activity is projected within the suitable area; however, a 10-megawatt geothermal power plant is postulated within nonsuitable lands in the southern part of Table Mountain WSA.

Conclusion: A 10-megawatt geothermal power plant would be developed in the nonsuitable portion of Table Mountain WSA as projected.

Mineral Development

Within the WSAs, substantial exploration or mineral development is not projected due to the lack of sufficient geological evidence to support it. Low interest in the area, as shown by a lack of mining claims and plans of operations filed for exploration, and no known deposits of sufficiently large ore bodies, indicates that mineral development is unlikely on lands within the WSA boundary.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

The Sheepshead Mountains Group's vegetative composition, as described in the Vegetation section of the Affected Environment, would not substantially change, nor would the ecological status which is in the mid-seral stage overall.

The 63 miles of ways and 9.75 of dead-end roads, once closed to vehicle use, would naturally revegetate with annual forbs and grasses within approximately two growing seasons. Sagebrush would become established in these ways within five years.

The 106,155 acres designated wilderness would not be subject to surface disturbing activities. Vegetation dependent upon the existing, undeveloped environment would thus be maintained.

Three vegetative manipulation projects would be established in the nonsuitable portion of the WSA. One of the projects would change the vegetative composition on 2,500 acres from big sagebrush/cheatgrass to crested wheatgrass or some other adaptable forage species. That would change the ecological status from early seral on that site to a good or excellent condition class, depending on the success of the seeding. Another project would consist of burning about 2,280 acres to remove big sagebrush areas of native bunchgrass. The present mid-seral ecological status would improve to some extent, possibly as much as to late seral with this project. The third project would consist of seeding 1,000 acres of wind eroded soil to four-wing saltbush and a compatible grass species. This would change the ecological status from early seral to a good or excellent condition class.

The fencing project totaling 9 miles and the pipeline project totaling 5 miles would temporarily displace some vegetation during construction, but revegetation would occur after two or three growing seasons. The reservoirs, the well and the areas around the troughs would not be completely revegetated due to constant disturbance by livestock concentrating at the sites. Installation of the 10-megawatt geothermal power plant and associated transmission lines would remove vegetation from about 40 acres, none of which would revegetate.

Conclusion: The 63 miles of ways and 9.75 miles of dead-end roads in the area recommended suitable would naturally revegetate. The projected developments in the nonsuitable portion would directly disturb vegetation along 5 miles of pipeline and 9 miles of fence. Vegetative composition would change on 5,800 acres and be removed where the nine reservoirs, one well and the 10-megawatt power plant are located.

Impacts on Wildlife

Wildlife habitat for a summer population of 325 deer and 380 antelope and a winter population of 800 deer and 400 antelope would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives. Proposed habitat changes in the areas recommended nonsuitable would occur. One thousand acres of eroded soil on the west side of the Heath Lake WSA would be seeded to grass and four-wing saltbush. If successful, a marked increase in forage and cover for nongame species and antelope would result. Construction of four dikes near an artesian well in the Table Mountain WSA would create 20 acres of wetlands which would be heavily used by aquatic birds. Five thousand cubic yards of fill would be required to construct these dikes, disturbing four acres. Two guzzlers would be constructed in the Palomino Hills WSA. Three guzzlers are proposed in the area recommended suitable in Wildcat Canyon WSA and these would not be constructed since they are not necessary for the continued existence or welfare of wildlife in the area and they would not protect natural processes or restore deteriorated habitat. These five guzzlers were expected to benefit various species, including chukar, deer and nongame species. The reintroduction of bighorn sheep by ODFW, which would occur with an expected population increase to 200 bighorns over the long-term could result in the use of the these guzzlers and the proposed water developments for livestock use in the Sheepshead Mountains and Wildcat Canyon WSAs. These developments could be important to establishing bighorns in the Sheepshead Mountains. Past reintroductions of bighorns in other areas have often resulted in the animals moving a considerable distance from the release site. ODFW believes the Sheepshead Mountains WSA, the western part of the Wildcat Canyon WSA and the Table Mountain WSA have the best bighorn habitat in the Sheepshead Mountains.

The proposed sagebrush control, seeding and water developments identified for livestock in areas recommended nonsuitable could improve antelope habitat over 7,300 acres by changing the sagebrush cover to a herbaceous cover and by providing additional water. These changes could allow an increase of up to 35 antelope. Projected acres of habitat improvement for antelope are 3,000 acres in the Heath Lake WSA, 2,800 acres in the West Peak WSA and 1,500 acres in the Palomino Hills WSA. This would allow an increase of an estimated 35 antelope over and above the present numbers.

Many species of nongame wildlife are adversely affected by the conversion of sagebrush to crested wheatgrass due to the change in cover and forage. This would occur on 4,780 acres of the proposed sagebrush control project. Kit fox could be affected by sagebrush control because its prey would be impacted, but sage grouse habitat would be avoided and this species would not be impacted. There would be no significant impact to other wildlife populations in the study area.

The closure of 63 miles of ways and 9.75 miles of road would have a slight impact on game species and a negligible impact on other wildlife due to the light vehicle use that occurs.

Access for maintenance of the Bone Springs Exclosure in the Wildcat Canyon WSA and the Rock Corral Exclosure in the Palomino Hills WSA would be on foot. These exclosures are near perimeter roads that would remain open. A short hike would be required. The Getty Spring Exclosure in the Table Mountain WSA would be in the area recommended nonsuitable and maintenance would continue to be done using vehicle access.

Acquisition of private land would contain water sources heavily used by wildlife. Many of these tracts have springs on them.

The construction of the projected geothermal power plant and associated transmission lines and roads for the area recommended nonsuitable in the Table Mountain WSA would destroy habitat of nongame species over 40 acres.

Conclusion: Wildlife habitat and populations would be maintained on 106,155 acres designated wilderness. Bighorn sheep would be reintroduced. In the area recommended nonsuitable, antelope habitat would be improved over 7,300 acres. Aquatic habitat would be created on 20 acres. Nongame habitat (including kit fox) would be degraded on 4,780 acres.

Impacts on Horse Trap Access

The Heath Creek horse trap would be used on an average of once every four years to facilitate the removal of excess numbers of wild horses. The horse trap site and access would be maintained and improved as needed.

Conclusion: The 10 miles of vehicle routes would continue to be used as access to the Heath Creek horse trap.

Impacts on Livestock Grazing

Livestock grazing in the Sheepshead Mountains WSAs and within portions of five allotments would increase to 15,842 AUMs which includes 207 AUMs of temporary nonrenewable use. This temporary use is in the Alvord allotment and involves the Wildcat Canyon (27 AUMs) and Table Mountain (180 AUMs) WSAs. This use could become permanent depending upon the results of monitoring.

Vehicle use for livestock management and facility inspection and maintenance of 26 miles of fence on 63 miles of ways and 9.75 miles of dead-end roads would be precluded. Fence inspection and maintenance would be done on foot or by the use of riding or pack animals. This would result in some inconvenience and some additional expense to livestock operators. Mechanized heavy equipment would be used on the average of once every 10 years to maintain 78 reservoirs and 15 springs.

Under this alternative, the following range improvements would be constructed or developed in areas designated nonsuitable for wilderness: nine reservoirs, 5 miles of pipeline, one well, 9 miles of fence, 2,280 acres of brush control without seeding and 2,500 acres of brush control that would be seeded to adaptable forage species. These range improvements are projected to result in an increase in livestock grazing use of 2,809 AUMs. The improvements would be used to improve livestock distribution and provide additional forage to relieve grazing pressure in areas not within the WSAs. An additional 4,420 AUMs of available but unallocated forage would be allocated to livestock in the nonsuitable portion.

In the nonsuitable area, vehicle use for livestock management and maintenance would continue on 58 miles of ways.

Conclusion: Livestock grazing use would increase from 8,613 to 15,842 AUMs (addition of 7,229 AUMs). There would be some inconvenience and some additional expense to livestock operators due to closing of the ways and roads.

Impacts on Recreation

Motorized vehicle use would be precluded on 105,720 acres and on 9.75 miles of roads and 63 miles of ways.

Vehicle-oriented recreation would be eliminated within the area recommended suitable and would be displaced into other areas which are open. This would improve the quality of primitive recreation within the recommended area. Some hunters would continue to use the area, traveling by foot or horseback.

Primitive recreation, which is estimated to be 100 visitor days per year, would increase slightly but would not be sufficient to offset the reduction in vehicle-oriented recreation. In the nonsuitable area, vehicle use would continue on existing roads and ways with no change in use. Current overall recreational use is estimated to be 300 visitor days per year. Hunting for deer in the Table Mountain WSA, and antelope hunting in the Wildcat Canyon WSA would be affected the most by vehicle closures.

Conclusion: Wilderness designation would result in a reduction in the areas' overall recreation use, from the current level of 300 visitor days per year to 200 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would increase by 7,229 AUMs. Projected energy development would amount to one 10-megawatt geothermal power plant. Overall recreation use would decrease by 100 visitor days per year.

Table 8 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $85,548 plus an unknown level of increase attributable to the projected energy development.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by approximately $86,000.

No Wilderness/No Action

Recommended suitable for wilderness: 0 acres
Recommended nonsuitable for wilderness: 213,467 acres

Impacts on Wilderness Values

Under the no wilderness alternative, the entire 213,467 acres would not be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation and the area's special features (including outstanding scenic qualities, five plant species of special interest, kit fox habitat, and potential bighorn sheep habitat) would be subject to the effects of projected management actions, including range improvement projects, wildlife habitat improvement projects, continued use of vehicles in the area and the projected construction of a geothermal power plant.

Naturalness

Continued vehicle use of the existing 121 miles of ways and 96 miles of roads would maintain the impact of vehicle tracks and usage on naturalness, affecting approximately 36,382 acres (approximately 17 percent) within all six WSAs. Vehicles and heavy equipment used for livestock management and facility inspection and maintenance would prevent the ways and roads from revegetating.

Projected range improvements including 23 reservoirs, one spring, 11 miles of pipeline, two wells, 17 miles of fence, 14,500 acres of brush control and 5,000 acres of brush control and seeding and the accompanying changes in grazing patterns would directly affect 19,577 acres and visually influence all 213,467 acres of the area.

Projected wildlife habitat improvement projects, including a 1,000-acre seeding, four dikes to create a 20-acre wetland and five wildlife guzzlers would directly affect 1,050 acres and would visually influence an additional 25,800 acres within the Sheepshead Mountains Group.

The projected geothermal power plant would directly affect naturalness on 40 acres (30 acres for the plant and 10 acres for 2.5 miles of road and transmission line construction) and visually influence naturalness on 3,500 acres.

The total area visually influenced by these activities would be the approximately 213,000 acres. This is not the sum of the total of all visual influence because some of these projects are grouped together throughout and those in the same location would influence some of the same acres.

Solitude

Continued vehicle use of the existing 121 miles of ways and 96 miles of roads, human and mechanical activity associated with projected range improvement construction and maintenance, wildlife habitat improvement projects and the projected geothermal power plant would cause repeated, local impairment of solitude opportunities adjacent to these activities. The use of the horse trap approximately every 4 years would impair opportunities for solitude during the time the road is maintained and during a horse gathering operation. This influence would be short-term and of a local nature. Solitude opportunities in the remainder of the six WSAs would remain unchanged.

Primitive and Unconfined Recreation

Under this alternative, opportunities for participating in primitive recreation activities would be reduced by projected range improvements, wildlife habitat improvements, continued use of vehicles in the area and the construction of a projected geothermal power plant. The natural setting for primitive recreation experiences would be influenced by the project over the entire area of the six WSAs.

The 121 miles of ways and 96 miles of roads would remain open, allowing for the continued use of these ways and roads by vehicles and heavy equipment, which would limit and impair the ability to experience primitive recreation activities. Use of the Heath Creek horse trap would cause short-term, localized impairment of primitive and unconfined recreation opportunities during the time of a gathering. Range improvement projects, wildlife habitat improvement projects, vehicle use for grazing management and recreation activities, as well as the projected geothermal power plant would directly reduce opportunities for primitive and unconfined recreation on approximately 20,957 acres.

Special Features

Continued vehicle use of existing roads and ways would maintain the impacts upon the special features, including outstanding scenic quality, plant and wildlife species of special interest and potential bighorn sheep habitat. These impacts includes impairment of scenic vistas, minor seasonal disturbance to wildlife projected development of other resources, including energy, range and wildlife developments.

Conclusion: In the absence of wilderness designation, projected management actions would directly impair wilderness values over approximately 20,600 acres of all six WSAs, and would indirectly influence all 213,467 acres within the area, with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

The entire 213,467 acres of all six WSAs would be open to mineral and energy exploration and development.

Energy Development

All 213,467 acres of public land in the Sheepshead Mountains Group of six WSAs would remain open to energy exploration and development.

Due to the lack of sufficient geologic evidence to support an extensive oil and gas exploration/development program and no known deposits, no exploration or development is projected.

Acreage with a high or moderate potential for geothermal resources is limited to three WSAs within the Sheepshead Mountains Group, Table Mountain WSA, West Peak WSA and Wildcat Canyon WSA. Geothermal exploration would occur and a 10-megawatt geothermal power plant is projected in the southern area.

Conclusion: One 10-megawatt geothermal power plant would be constructed as projected.

Mineral Development

The entire area would remain open to mineral development. However, due to the lack of direct evidence, no known ore bodies of sufficient size to merit development and the lack of claims located within the WSA, only casual exploration (without development) is projected.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

The 121 miles of ways and 96 miles of roads would remain open to vehicle use and would not revegetate.

Seven vegetation manipulation projects would be established, changing the dominant forage species on 20,500 acres. Five of the projects totaling 14,500 acres are designed for brush control only, removing the sagebrush overstory and creating grassland habitat. Another project, totalling 5,000 acres is designed to remove the sagebrush overstory and seeding an adaptable grass species to replace the brush. One more project covering 1,000 acres is on a site that has been subject to wind erosion, leaving bare ground in many areas. This site would be seeded to four-wing saltbush and an adaptable grass species. All of the vegetation manipulation projects are proposed to raise the ecological status on sites presently in low to mid-seral status, to high seral status.

The spring development, the fencing projects totaling 17 miles and the pipeline projects totaling 11 miles would temporarily displace some vegetation during construction, but revegetation would occur after two or three growing seasons. The 23 reservoirs, two wells and the areas around trough sites would not be completely revegetated due to constant disturbance by livestock.

Dike construction in the Mickey Basin area would hold back the existing water and create 20 acres of wetland habitat where a playa type previously occurred.

The installation of the 10-megawatt geothermal power plant and associated transmission lines and roads would remove vegetation from about 40 acres, none of which would revegetate.

Conclusion: None of the roads or ways would revegetate. Vegetation manipulation projects would change the vegetative composition on 20,500 acres. Vegetation would be removed from 40 acres.

Impacts on Wildlife

Wildlife habitat for a summer population of 325 deer and 380 antelope and a winter population of 800 deer and 400 antelope would be maintained. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives.

One thousand acres of eroded soil on the west side of the Heath Lake WSA would be seeded to grass and four-wing saltbush. If successful, a marked increase in forage and cover for nongame species and antelope would result. Construction of four dikes near an artesian well in the Table Mountain WSA would create 20 acres of wetlands which would be heavily used by aquatic birds. Five thousand cubic yards of fill would be required to construct these dikes, disturbing 4 acres.

Three guzzlers would be constructed in the Wildcat Canyon WSA and two guzzlers would be constructed in the Palomino Hills WSA. These five guzzlers are expected to benefit various species, including chukar, antelope, deer and nongame species. The reintroduction of bighorn sheep would occur with an expected population increase to 200 bighorns over the long term. The reintroduction of bighorns could result in the use of these guzzlers as well as the proposed water developments for livestock. These developments could be important to establishing bighorns in the Sheepshead Mountains. The ODFW believes the Sheepshead Mountains WSA, the western part of the Wildcat Canyon WSA and the Table Mountain WSA have the best bighorn habitat in the Sheepshead Mountains.

The proposed sagebrush control, seeding and water developments for livestock could improve antelope habitat over 24,000 acres by changing the sagebrush cover to an herbaceous cover and by providing additional water. Projected acres of habitat improved by WSA for antelope are 10,000 acres in Sheepshead Mountains WSA, 4,000 acres in Wildcat Canyon WSA, 3,000 acres in Heath Lake WSA, 2,700 in Table Mountain WSA, 2,800 acres in West Peak WSA and 1,500 acres in the Palomino Hills WSA. This would allow an increase of an estimated 100 antelope over present numbers.

Many species of nongame wildlife are adversely affected by the conversion of sagebrush to the herbaceous cover due to the change in cover and forage. This would occur on 19,500 acres of sagebrush control. Nongame nesting, thermal cover and forage would be reduced as a result of the additional allocation of livestock AUMs. Kit fox could be affected by sagebrush control because its prey would be impacted, but sage grouse habitat would be avoided and this species would not be impacted. There would be no impact to other wildlife populations in the study area.

The four exclosures would continue to be maintained utilizing vehicles.

The construction of a projected geothermal power plant and associated transmission lines and roads in the Table Mountain WSA would eliminate the habitat of nongame species over 40 acres.

Conclusion: Bighorn sheep would be reintroduced. Antelope habitat would be improved over 24,000 acres. Aquatic habitat would be created over 20 acres. Nongame species habitat (including kit fox) would be degraded on 19,500 acres.

Impacts on Horse Trap Access

The Heath Creek horse trap would be used on an average of once every four years to facilitate the removal of excess numbers of wild horses. The horse trap site and access would be maintained and improved as needed.

Conclusion: The 10 miles of vehicle routes would continue to be used as access to the Heath Creek horse trap.

Impacts on Livestock Grazing

Livestock grazing in the Sheepshead Mountains Group WSA and within portions of five allotments would increase to 17,492 AUMs which includes 207 AUMs of temporary nonrenewable use. This temporary use is in the Alvord allotment and involves the Wildcat Canyon (27 AUMs) and Table Mountain (180 AUMs) WSAs, could become permanent depending upon the results of monitoring.

Under this alternative, all range improvements would be constructed or developed including 23 reservoirs, 11 miles of pipeline, two wells, 17 miles of fence, 14,500 acres of brush control without seeding and 5,000 acres of brush control that would be seeded to adaptable forage species. These range improvements are projected to result in an increase in livestock grazing use of 4,459 AUMs. These range improvements would be used to permit better livestock distribution and provide additional forage to relieve grazing pressure in areas not within the WSAs. An additional 4,420 AUMs of livestock forage currently available but unallocated would be allocated to livestock.

Vehicle use for livestock management and facility inspection and maintenance of 38 miles of fence on 125 miles of ways and 96 miles of roads would continue. Mechanized heavy equipment would be used on the average of once every 10 years to maintain 97 reservoirs and 21 springs and every 2 years for four wells.

Conclusion: Livestock grazing use would increase to 17,492 AUMs, including 4,459 AUMs from projected range improvements and 4,420 AUMs of available but unallocated forage. Vehicle use for livestock management and maintenance would continue on all roads and ways.

Impacts on Recreation Use

Vehicle-oriented recreation use would continue within the WSAs. Primitive recreation opportunities would be impacted in areas adjacent to motorized vehicle use. Impacts from potential developments for range, minerals and wildlife would also reduce primitive recreation.

Recreation use would continue at a level of approximately 300 visitor days per year.

Conclusion: The areas' overall recreation use level of 300 visitor days per year would not be substantially affected under this alternative.

Impacts on Local Personal Income

Livestock grazing would increase by 8,879 AUMs. Projected energy development would amount to one 10-megawatt geothermal power plant. Overall recreation use would remain at 300 visitor days per year.

Table 8 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $106,548 per year plus an unknown level of increase attributable to the projected energy development.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by approximately $107,000.

Unavoidable Adverse Impacts of the Proposed Action

Within the suitable area, under the Proposed Action, mineral exploration and an increase in livestock forage allocation would be foregone. Vehicle use would be excluded, reducing opportunities for those who prefer this type of recreation. There would be a slight increase in livestock management costs as a result of the closure of 63 miles of ways.

On 107,747 acres recommended nonsuitable, projected range, wildlife and energy developments would lead to unavoidable adverse impacts to wilderness values as a result of 5,900 acres of surface disturbance and vegetative manipulation, which would visually influence approximately 107,000 acres.

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity

Under the Proposed Action, most existing short-term uses would continue, with some added minor inconvenience and expense to the livestock operators resulting from the exclusion of vehicles on 63 miles of ways and 9.75 miles of dead-end roads for day-to-day operation activities. Vehicle-oriented recreation uses, such as hunting, would be replaced by other types of primitive recreation activities. The long-term productivity of the wilderness values in the portion of the WSAs recommended for wilderness designation would be preserved.

In the portion of the WSAs recommended nonsuitable, the long-term ability of the area to produce wilderness values would be directly lost on 5,900 acres and visually impaired on approximately 107,000 acres due to projected range developments, wildlife habitat improvement projects and a 10-megawatt geothermal power plant, as well as further declines from continued motorized vehicle use in the area and other potential uses over the long term.

Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, there would be no irreversible or irretrievable commitment of the wilderness resource or any other resources within the portion of the WSAs recommended suitable for designation.

In the portion of the Sheepshead Mountains Group recommended nonsuitable, range improvements consisting of a 2,280-acre brush control project, a 2,500-acre brush control and seeding, nine reservoirs, 5 miles of pipeline, one well and 9 miles of fence would directly reduce wilderness values on 4,813 acres. Projected wildlife habitat projects would reduce some wilderness values (naturalness) on 1,025 acres directly; however, these projects would enhance other wilderness values (wildlife special features). The projected geothermal power plant and associated transmission lines and roads would directly reduce wilderness values on 40 acres with an irretrievable commitment of the energy resource. Overall, this would visually impair approximately 107,000 acres.

5. Wilderness Manageability and Rationale for the Proposed Action

Manageability of the Area as Wilderness

All of the wilderness study areas in the Sheepshead Mountains area would be manageable as separate wilderness areas under the all wilderness alternative. Manageability problems could occur in several of the study areas; however, due to the presence of scattered split-estate and private land.

The manageability problem concerning the private and split-estate parcels affects five of the six WSAs in the group. The Heath Lake WSA is the only one that does not contain a private or split-estate parcel or have a boundary parcel which protrudes into the study area.

Although no developments are planned for any of the parcels at this time, all of the private and split-estate lands are within an area of moderate potential for the occurrence of oil and gas. Some of the other parcels are also within areas which have moderate to high potential for the occurrence of geothermal resources, or moderate potential for metallic metals, diatomite, or zeolite. If development were to occur on any of these parcels, management of the area to preserve its wilderness values could be difficult.

The roads which separate the study areas and the dead-end roads which enter four of the WSAs would not present substantial problems in managing the area as wilderness. Although vehicle use of the roads would have an adverse effect on opportunities for solitude, such use is relatively infrequent. In addition, most vehicle use is confined to the existing roads. The roads are not normally or significantly used as access points for off-highway vehicle activities.

Most of these manageability problems would be eliminated under the enhanced wilderness alternative and the proposed action. Land and mineral estate acquisition, road closures, and boundary adjustments proposed under either of these alternatives would reduce or eliminate the potential management problems which could occur under the all wilderness alternative. The areas recommended as suitable under the enhanced wilderness and proposed alternatives would be manageable as wilderness.

Rationale for the Selection of the Proposed Action

The area recommended as suitable within three wilderness study areas under the Proposed Action includes the central portion of the Sheepshead Mountains region. This area contains the large main ridge of Sheepshead Mountains (within the Sheepshead Mountains WSA) as well as most of the higher elevation, rolling plateau country to the east and south (also in the Sheepshead Mountains WSA and in the Wildcat Canyon WSA).

Also included in the suitable area are flat, rock-edged plateaus (in Table Mountain WSA) and several steep, winding canyons which cut sharply into the plateau (in Wildcat Canyon WSA).

This area is in a basically natural condition and has outstanding opportunities for solitude and several primitive recreation activities. Also included within the area are special features which include several plant species of special interest, and wildlife values such as kit fox habitat and suitable range for bighorn sheep.

Wilderness designation within portions of the Sheepshead Mountains, Table Mountain and the entire Wildcat Canyon WSAs recommended suitable, would protect and maintain wilderness values and special features within an area which is capable of being managed to preserve these qualities. The boundary as defined under the Proposed Action would also help to eliminate possible conflicts with geothermal energy development. Manageability of these WSAs would be improved with the acquisition of private land inholdings and boundary parcels and mineral estate of the split-estate lands.

The portion of the Sheepshead Mountains Group that is proposed as nonsuitable for wilderness designation leaves the area open for the projected development of one 10-megawatt geothermal power plant along with range improvement projects.

The northern portion of the Sheepshead Mountains WSA is recommended nonsuitable because the sights and sounds of vehicle use on the adjacent state highway lessen the wilderness values of this part of the study area.

The northern part of the study area also contains a parcel of private land which extends into the WSA as part of the boundary. This parcel and some other private lands which form parts of the northern boundary could cause minor manageability problems. The wilderness values in this part of the WSA are not sufficient to warrant acquisition of these private lands, nor are they sufficient to outweigh the value of leaving this area open to other uses.

Almost all of the area recommended as nonsuitable in the southern end of the Table Mountain WSA has been identified as having high potential for the occurrence of geothermal resources with the remainder of the area having moderate geothermal favorability.

Part of the area near Mickey Basin has been recommended as nonsuitable for wilderness to allow for the construction of a waterfowl habitat project. Although this part of the Table Mountain WSA has good wilderness values, other resource values are also high.

Within the Heath Lake study area recommended nonsuitable, there is a proposal for a large vegetative manipulation project on the eastern side, which would also contain several miles of pipeline and fence. In the West Peak WSA recommended nonsuitable, the potential for geothermal resources is rated moderate to high, and a vegetation manipulation project is also proposed along the western boundary. The wilderness values in these areas do not offset the potential value of developing the other resources.

The Palomino Hills WSA is recommended as nonsuitable for wilderness primarily because of the limited wilderness values throughout a large part of the area. Although the area is large enough to provide opportunities for solitude, much of the northern and eastern portions are influenced by the state highway which forms much of this boundary. The highway, the use it receives, the developments which occur within its right-of-way, and the general lack of topographic or vegetative screening reduce the wilderness values in this portion of the WSA.

There are somewhat more impressive wilderness values in the southern and western portions of the Palomino Hills study area, but they are insufficient to offset the value of leaving the area open to other uses. Though no development is projected, the entire area has a moderate potential for oil and gas, diatomite and zeolite, and there is a potential to improve range management through the development of reservoirs.

6. Summary and Analysis of Public Comments

Following is a summary of public comments specific to the WSA concerning adequacy of the analysis in this appendix and responses to those comments. These comments were received both in writing and oral testimony at public hearings during the comment periods for the 1985 Draft EIS and the 1987 Supplement to the Draft EIS. Comments concerning the BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning statewide issues and analysis are addressed in the Statewide volume.

Comment: The economic effect of road closures on ranching are inadequately analyzed. Expenses to operators are higher than shown. **Response:** Environmental Consequences, Section 4, Impacts on Local Personal Income in the enhanced alternative shows overall cost expectations. The closure of roads under this alternative are now shown as costing livestock operators an estimated $2,200 annually. Also see Impacts on Livestock Grazing for totals of road closure mileages (Section 4).

Comment: Wilderness designation will protect an unusual stand of three-tipped sagebrush. **Response:** The three-tipped sagebrush occurs at one location within the Sheepshead Mountains Group WSA, which is located in the West Peak WSA. Section 3, Affected Environment, contains a discussion of three-tipped sagebrush under the Vegetation section and impacts are discussed in the Environmental Consequences section.

Comment: Explore alternative that adds No. 3-116 to Sheepshead Group. **Response:** Wilderness Study Area No. 3-116 was eliminated from further wilderness review during the inventory phase of BLM's analysis process. See Chapter 5 of the Statewide volume under scoping, for a discussion of issues relating to inventory concerns.

Comment: Low altitude training flights are incompatible with wilderness values. **Response:** Military jet aircraft use the Sheepshead Mountains Group area frequently for low altitude training flights. The influence of these flights on a visitor's perception of solitude and, to some degree, naturalness, is extreme for a short period of time (one minute or less), but it is also quite temporary. These flights do not have a long lasting, adverse effect on a visitor's opportunity to find solitude. In reference, see discussion under Section 3 - Affected Environment; Opportunities for Solitude or Primitive and Unconfined Types of Recreation.

Comment: Impacts of proposed seedings on scenic values were not assessed in the Environmental Consequences section for the Proposed Action and No Wilderness/No Action alternatives. **Response:** Visual influence of seedings is discussed under naturalness in the Environmental Consequences section.

Comment: The Saddle Butte Lava Flow, brine shrimp in the playa lakes and the new lake at Sulphur Springs should all be included as special features. **Response:** None of the items mentioned are considered by BLM to be so unusual as to qualify as special features. While the Saddle Butte Lava Flow extends into the Palomino Hills WSA and is mentioned under Section 1, Introduction, General Description, the Saddle Butte Lava Flow ACEC is located outside and to the north of the WSA. Brine shrimp may occur in playa lakes in the area, but the BLM does not have specific information verifying their occurrence. Unless a rare, threatened or endangered species were identified, the presence of brine shrimp would not be considered an unusual occurrence in eastern Oregon. The playa lake at Sulphur Springs is not a new lake. Many of these lakes fill with water during wet climatic periods and this water may persist for several years before a dry climatic cycle arrives and the lakes again dry up.

Comment: A bobcat was sighted in the Sheepshead Mountains area and should be considered in preparing the Wilderness Appendix assessment. **Response:** The bobcat has been added to the list of animals found within the Sheepshead Mountains Group area. See Wildlife, Section 3, Affected Environment.

Comment: Waterfowl habitat exists in the Sulphur Springs area and Sandhill cranes were sighted in the playa lake. **Response:** The Sulphur Springs waterfowl habitat has been noted and is discussed. See Wildlife, Section 3, Affected Environment.

Comment: Impacts of the management of game animals on the sensitive vegetation was not adequately assessed. **Response:** Sensitive vegetation would not be impacted by game animals due to the low populations of game animals within the entire Sheepshead Mountains Group.

Comment: Wilderness designation would have significant impacts on the development of adjacent private and public lands. **Response:** The designation of wilderness would not prohibit development on private lands nor will access be denied to private land through lands administered by the BLM, however, the closure of 12.25 miles of roads and ways in the proposed action could result in some inconvenience. Development would be limited on public lands within a designated wilderness area with the exception of those projects that would enhance wilderness values or for activities that have "existing rights" prior to wilderness designation.

Comment: There are major problems with split-estate mineral and energy resources with the State of Oregon. **Response:** There are 5,340 acres of split-estate within the proposed wilderness alternative. An attempt for their acquisition or land exchange is projected where these lands fall within a suitable recommendation.

Comment: There are serious conflicts with oil, gas, geothermal, mineral and range developments. **Response:** Environmental Consequences, Section 4, examines those resources affected by each alternative. There are no projected developments for oil, gas or mineral resources within the entire WSA due to a lack of sufficient geological evidence to support an extensive exploration/development program and no known deposits. However, one 10-megawatt geothermal power plant is projected to be developed in the nonsuitable wilderness portion of the Table Mountain WSA in both the proposed action and the no wilderness/no action alternatives. In both the all wilderness and enhanced wilderness alternatives, production from the 10-megawatt geothermal power plant would be foregone. There would be no new range developments in either the all wilderness and enhanced wilderness alternatives resulting in no change in AUMs. In the proposed wilderness alternative, within the nonsuitable portion, range developments would be allowed resulting in an additional 7,229 AUMs. The no wilderness/no action alternative would realize an additional 8,879 AUMs based upon projected range development projects.

Table 1. Withdrawal of Areas with Moderate and High Potential for Occurrence of Energy and Mineral Resources Under Each Alternative, Sheepshead Mountains Group WSAs (OR-2-72C, 72D, 72F, 72I, 72J and 3-114 and Sulphur Springs Area).

	Acres Withdrawn								
	All Wilderness						Enhanced Wilderness	Proposed Action	No Wilderness/ No Action
	Sheepshead Mountains (2-72C)	Wildcat Canyon (2-72D)	Heath Lake (2-72F)	Table Mountain (2-72I)	West Peak (2-72J)	Palomino Hills (3-114)	(6 WSAs combined)	3 WSAs combined)	(All 6 WSAs)
Total area	51,120	32,720	20,100	38,600	7,900	50,560	216,200[1]	100,380[2]	0
Oil and Gas rated moderate	51,120	32,720	20,100	38,600	7,900	50,560	216,200	100,380	0
Geothermal rated moderate	0	7,680	0	11,880	6,675	0	26,235	16,700	0
Geothermal rated high	0	0	0	12,960	1,230	0	14,190	1,280	0
Metals rated moderate	700	1,480	590	2,700	3,300	0	8,770	2,180	0
Diatomite rated moderate	4,520	2,400	960	890	340	6,690	15,800	6,420	0
Zeolites rated moderate	1,300	0	0	0	0	6,690	7,990	900	0

[1] Includes 15,200 acres of public land (Sulphur Springs area) proposed to be added under this alternative. Development would also be precluded on an additional 15,247 acres if private land and mineral estate is acquired, as proposed under this alternative.

[2] Development also precluded on an additional 5,775 acres if private land and mineral estate is acquired as proposed under this alternative.

Table 2. Summary of Proposed Management Under Each Alternative, Sheepshead Mountains (OR-2-72C), Wildcat Canyon (OR-2-72D), Heath Lake (OR-2-72F), Table Mountain (OR-2-72I), West Peak (OR-2-72J), and Palomino Hills (OR-3-II4) WSAs

Proposed Management	All Wilderness	Enhanced Wilderness	Proposed Action	No Wilderness/ No Action
Acres Designated as Wilderness	213,467	229,867[1]	105,720	0
Acres Closed to OHVs by Wilderness Designation[2]	213,467	229,867[1]	105,720	0
Miles of Roads Closed	0	96	9.75	0
Miles of Roads Constructed	0	0	2.5	2.5
Miles of Ways Closed	121	125	63	0
Acres of Full Fee Estate Acquired[3]	0	1,580	435	0
Acres of Mineral Estate Acquired[4]	0	13,667	5,340	0
Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation	201,000	216,200[1]	100,380	0
Number of Power Plants Developed	0	0	1	1
Miles of Transmission Lines Constructed	0	0	2.5	2.5
Structural Wildlife Projects Developed:				
Catchments and Guzzlers (number)	0	0	2	5
Wetlands Projects (number)[5]	0	0	1	1
Vegetative Manipulation for Wildlife:				
Seeding (acres)[6]	0	0	1,000	1,000
Structural Livestock Projects Developed:				
Reservoirs & Waterholes (number)	0	0	9	23
Springs (number)	0	0	0	1
Wells (number)	0	0	1	2
Pipelines (miles)	0	0	5	11
Fences (miles)	0	0	9	17
Storage Tanks (number)	0	0	0	1
Vegetative Manipulation for Livestock:				
Brush Control Without Seeding (acres)	0	0	2,280	14,500
Brush Control With Seeding (acres)	0	0	2,500	5,000
Increase Livestock Forage Allocation from Projects (AUMs)	0	0	2,809	4,459
Unallocated Existing Forage Allocated (AUMs)	0	0	4,420	4,420

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[1] This total includes 16,400 acres of public land outside the WSA.
[2] Except for the roads and ways, all of the acres in the WSAs are currently closed to OHV use.
[3] Upon acquisition, these additional lands would be incorporated into the wilderness area, closed to vehicle use, and withdrawn from mineral location and leasing.
[4] Upon acquisition of mineral estate, these lands would be withdrawn from mineral location and leasing.
[5] The project involves placement of 4 dikes to create 20 surface acres of wetlands.
[6] No brush control is required for this seeding.

Table 3. Summary of Environmental Consequences of Alternatives, Sheepshead Mountains (OR-2-72C), Wildcat Canyon (OR-2-72D), Heath Lake (OR-2-72F), Table Mountain (OR-2-72I), West Peak (OR-2-72J), and Palomino Hills (OR-3-II4) WSAs and Sulphur Springs Area

Resource or Activity	All Wilderness	Enhanced Wilderness	Proposed Action	No Wilderness/No Action
Wilderness Values	Wilderness designation of the entire 213,467 acres within the six WSAs would result in the protection and enhancement of the existing wilderness values.	Wilderness designation of the 231,447 acres would result in the protection and enhancement of existing wilderness values.	Wilderness designation of the 105,720 acres would result in protection and enhancement of the existing wilderness values in the area. The 107,747 acres recommended nonsuitable would be subject to projected activities that would impair wilderness values over approximately 107,000 acres, with further declines from other potential uses over the long term.	In the absence of wilderness designation, projected management actions would directly impair wilderness values over approximately 20,600 acres of all six WSAs, and would indirectly influence all 213,467 acres within the area with further declines from other potential uses over the long term.
Energy and Mineral Development	Wilderness designation would result in foregone energy production from one projected 10-megawatt geothermal power plant within the Table Mountain WSA. No impact to mineral development is expected.	Wilderness designation would result in foregone production from one projected 10-megawatt geothermal power plant in the Table Mountain WSA. No impact to mineral development is expected.	A 10-megawatt geothermal power plant would be developed in the nonsuitable portion of Table Mountain WSA as projected. No impact to mineral development is expected.	One 10-megawatt geothermal power plant would be constructed as projected. No impact to mineral development is expected.
Vegetation	The 121 miles of closed ways totaling approximately 120 acres would naturally revegetate. Overall vegetation would remain unchanged.	Overall vegetation would remain unchanged. Approximately 320 acres would naturally revegetate.	The 63 miles of ways and 9.75 miles of dead-end roads in the area recommended suitable would naturally revegetate. The projected developments in the nonsuitable portion would directly disturb vegetation along 5 miles of pipeline and 9 miles of fence. Vegetative composition would change on 5,800 acres and be removed from where the nine reservoirs, one well and the 10-megawatt power plant are located.	None of the roads or ways would revegetate. Vegetation manipulation projects would change the vegetative composition on 20,500 acres. Vegetation would be removed from 40 acres.
Wildlife	Wildlife habitat and populations would be maintained on 213,467 acres designated wilderness. Bighorn sheep would be reintroduced. Precluded seeding, guzzlers and wetland projects would result in foregone improvement of antelope, bighorn sheep, aquatic birds and nongame species' habitat on 1,020 acres.	Wildlife habitat and populations would be maintained on 231,447 acres designated wilderness. Bighorn sheep would be reintroduced. Precluded seeding, guzzlers and wetland projects would result in foregone improvement of antelope, bighorn sheep, aquatic birds and nongame species' habitat on 1,020 acres.	Wildlife habitat and populations would be maintained on 106,155 acres designated wilderness. Bighorn sheep would be reintroduced. In the area recommended nonsuitable, antelope habitat would be improved over 7,300 acres. Aquatic habitat would be created on 20 acres. Nongame habitat (including kit fox) would be degraded on 4,780 acres.	Bighorn sheep would be reintroduced. Antelope habitat would be improved on over 24,000 acres. Aquatic habitat would be created on over 20 acres. Nongame species' habitat (including kit fox) would be degraded on 19,500 acres.
Horse Trap Access	Closure of the 4 miles of way would make the horse trap inaccessible to motorized vehicles, thus increasing the time, manpower and cost of gathering excess wild horses.	Closure of the entire 10 miles of access route would make the horse trap inaccessible to motorized vehicles, thus increasing the time, manpower and cost of gathering excess wild horses.	The 10 miles of vehicle routes would continue to be used as access to the Heath Creek horse trap.	The 10 miles of vehicle routes would continue to be used as access to the Heath Creek horse trap.
Livestock Grazing	Livestock grazing would remain at the current level of 8,613 AUMs of total use. There would be an inconvenience and additional expense to livestock operators due to closing of 121 miles of ways.	Livestock grazing use would remain at the current level of 9,447 AUMs of total use in the WSA and the Sulphur Springs area. There would be a major inconvenience and considerable additional expense to livestock operators due to closing the boundary roads.	Livestock grazing use would increase from 8,613 to 15,842 AUMs (addition of 7,229 AUMs). There would be some inconvenience and some additional expense to livestock operators due to closing of the ways and roads.	Livestock grazing use would increase to 17,492 AUMs, including 4,459 AUMs from projected range improvements and 4,420 AUMs of available but unallocated forage. Vehicle use for livestock management and maintenance would continue on all roads and ways.

Table 3. Summary of Environmental Consequences of Alternatives, Sheepshead Mountains (OR-2-72C), Wildcat Canyon (OR-2-72D), Heath Lake (OR-2-72F), Table Mountain (OR-2-72I), West Peak (OR-2-72J), and Palomino Hills (OR-3-114) WSAs and Sulphur Springs Area

Resource or Activity	All Wilderness	Enhanced Wilderness	Proposed Action	No Wilderness/No Action
Recreation Use	Wilderness designation would result in a net reduction in the areas' current recreation use level of 300 visitor days per year to 200 visitor days per year.	Wilderness designation would result in a reduction in the areas' overall recreation use, from the level of 300 visitor days per year to 100 visitor days per year.	Wilderness designation would result in a reduction in the areas' overall recreation use, from the current level of 300 visitor days per year to 200 visitor days per year.	The areas' overall recreation use level of 300 days per year would not be substantially affected under this alternative.
Local Personal Income	Annual local personal income would decrease by approximately $1,000.	Annual local personal income would decrease by approximately $2,000.	Annual local personal income would increase by approximately $86,000.	Annual local personal income would increase by approximately $107,000.

Table 4. Unnatural Developments in the Sheepshead Mountains Groups, WSAs OR-2-72C, 72D, 72F, 72I, 72J and 3-1114, and Sulphur Springs Area

Development	Sheepshead Mountains (2-72C)	Wildcat Canyon (2-72D)	Heath Lake (2-72F)	Table Mountain (2-72I)	West Peak (2-72J)	Palomino Hills (3-114)	Sulphur Springs
Ways							
Number of Ways	20	11	4	11	1	8	1
Number of Miles	42.5	20	9.25	23.6	0.5	25	4
Fences							
Number of Fences	3	2	4	9	1	-	4
Number of Miles	9.4	14	1.5	13	0.25	-	6
Water troughs	5	-	1	-	2	-	-
Spring developments	7	8	-	1	-	5	-
Reservoirs	32	21	7	27	3	10	6
Wells	-	-	-	3	1	-	1
Borrow Pits	1	-	1	-	-	7	-
Seeding (crested wheatgrass)	1	-	-	-	-	-	-
Corrals	2	1	-	-	-	-	-
Cabin	1	-	2	-	-	-	-
Percent of WSA influenced	17	13	7	15	3	11	-

Table 5. Ecosystems of ONHP within the Sheepshead Mountains Group, WSAs OR-2-72C, 72D, 72F, 72I, 72J and 3-II4 and Sulphur Springs Area.

(x denotes occurrence in WSA)

Basin and Range Province Ecosystems	Sheepshead Mountains (2-72C)	Wildcat Canyon (2-72-D)	Heath Lake (2-72-F)	Table Mountain (2-72I)	West Peak (2-72J)	Palomino Hills (3-114)	Sulphur Springs Area[1]
big sagebrush/bluebunch wheatgrass[2]	x	x	x	x	x	x	x
low sagebrush/bluebunch wheatgrass[2]	x					x	
low sagebrush/Sandberg's bluegrass	x	x					
Shadscale-bud sage-spiny hopsage community complex		x		x	x		x
silver sage community[2]	x		x			x	
bare playa and playa margin communities			x	x	x		x
big sagebrush-spiny hopsage community				x	x		x
big sagebrush-greasewood				x			x
greasewood/saltgrass community				x	x		x
winterfat community				x			
Alkaline vegetation mosaic with representative communities including greasewood, shadscale, saltgrass, and spiny hopsage types[3]						x	

[1] Area recommended as wilderness under enhanced wilderness alternative, not in a WSA.

[2] Ecosystems found in both Basin and Range Province and Owyhee Uplands Province of ONHP.

[3] Owyhee Uplands Province ecosystem.

Table 6. Classification of Energy and Mineral Potential, Sheepshead Mountains Group, WSAs OR-2-72C, 72D, 72F, 72I, 72J, and 3-114 and Sulphur Springs Area (SS)

Commodity	Area	Level of Potential	Level of Certainty
Metals (gold, silver copper, mercury)	Parts of 2-72C, 2-27D, 72F, 72I, 72J [1]	M	B
	2-72F, 2-72I, 2-72J, 3-114;	L	B
	Parts of 2-72C, 2-72D, SS	L	B
Geothermal	Parts of 2-72I, 2-72J [1]	H	D
	Parts of 2-72D, 2-72I, 2-72J [1]	M	B
	3-114, SS: part of 2-72D, 2-72I	L	B
	2-72C, 2-72F	O	B
Uranium/Thorium	2-72F	L	C
	2-72C, 2-72D	O	B
	2-72I, 2-72J, 3-114, SS	O	A
Coal	2-72C, 2-72D, 2-72I, 2-72J, SS	L	C
	2-72F	L	A
	3-114	O	B
Oil/Gas	Entire area (all WSAs and SS)	M	B
Tar Sands/Oil Shale	2-72C, 2-72D	L	A
	2-72I, 2-72J, 3-114, SS	O	C
	2-72F	O	B
Limestone	2-72C, 2-72D, 2-72I, 2-72J, 3-114, SS	L	A
	2-72F	O	B
Bentonite	Entire area (all WSAs and SS)	L	A
Diatomite	Parts of all WSAs [1]	M	B
	Parts of all WSAs and SS	O	B
Zeolites	Parts of 2-72C, 3-114 [1]	M	B
	2-72D, 2-72F, 2-72I, 2-72J, 3-114, SS	L	A
Sodium	Entire area (all WSAs and SS)	L	A

[1] See map 5

Legend:

Level of Potential

O - No indication for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Moderate potential for accumulations of energy/mineral resource
H - High potential for accumulations of energy/mineral resource

Level of Certainty

A - Insufficient data or no direct evidence
B - Indirect evidence available
C - Direct evidence but quantitatively minimal
D - Abundant direct and indirect evidence

Table 7. Existing Livestock Use in the Sheepshead Mountains Group, WSAs OR-2-72C, 72-D, 72F, 72I, 72J, 3-114, and Sulphur Springs Area.

Grazing Allotment	Licensed AUMs in Allot.	Period of Use	Percent of Allot. in WSA	Current Estimated Use in WSA (AUMs)
Sheepshead Mountains WSA (OR-2-72C)				
Sheepshead (No. 070I)	3,000	04/01 to 10/31	39	1,518
Pollock (No.60II)	4,107	05/05 to 12/31	24	473
Alvord (No. 60I2)	9,072	04/16 to 06/30	1	235
Total Sheepshead Mountains	16,179			2,226
Wildcat Canyon WSA (OR-2-72D)				
Sheepshead (No. 070I)	3,000	04/01 to 10/31	30	932
Barren Valley Common (No. 080I)	10,237	11/01 to 03/31	2	20
Alvord (No. 60I2)	9,072	04/16 to 06/30 12/01 to 04/15	4	835 80 27[1]
Total Wildcat Canyon	22,309			1,894[1]
Heath Lake WSA (OR-2-72F)				
Pollock (No. 60II)	4,107	05/05 to 10/31	24	857
Total Heath Lake	4,107			857
Table Mountain WSA (OR-2-72)				
Pollock (No. 60II)	4,107	11/01 to 12/31	6	93
Alvord (No. 60I2)	9,072	04/16 to 06/30 12/01 to 04/15	12	920 520 180[1]
Mann Lake (No. 6026)	3,670	12/01 to 02/28	15	231
Total Table Mountain	16,849			1,944[1]

Table 7. Existing Livestock Use in the Sheepshead Mountains Group, WSAs OR-2-72C, 72-D, 72F, 72I, 72J, 3-114, and Sulphur Springs Area.

Grazing Allotment	Licensed AUMs in Allot.	Period of Use	Percent of Allot. in WSA	Current Estimated Use in WSA (AUMs)
		West Peak WSA (OR-2-72J)		
Mann Lake (No. 6026)	3,670	12/01 to 02/28	21	410
Total West Peak	3,670			410
		Palomino Hills WSA (OR-3-114)		
Sheepshead (No. 0701)	3,000	04/01 to 10/31	25	808
Barren Valley Common (No. 0801)	10,237	11/07 to 03/31	6	474
Total Palomino Hills	13,237			1,282
Total Sheepshead Mountains Group	76,351			8,613 [1]
		Sulphur Springs Area		
Pollock (No.6011)	4,107	11/01 to 12/31	9	325
Alvord (No. 6012)	9,072	12/01 to 04/15	9	352 122 [1]
Mann Lake (No. 6026)	3,670	11/01 to 02/28	2	35
Total Sulphur Springs Area	16,849			834 [1]
Total Sheepshead Mtn. Group w/Sulphur Springs Area	93,200			9,447 [1]

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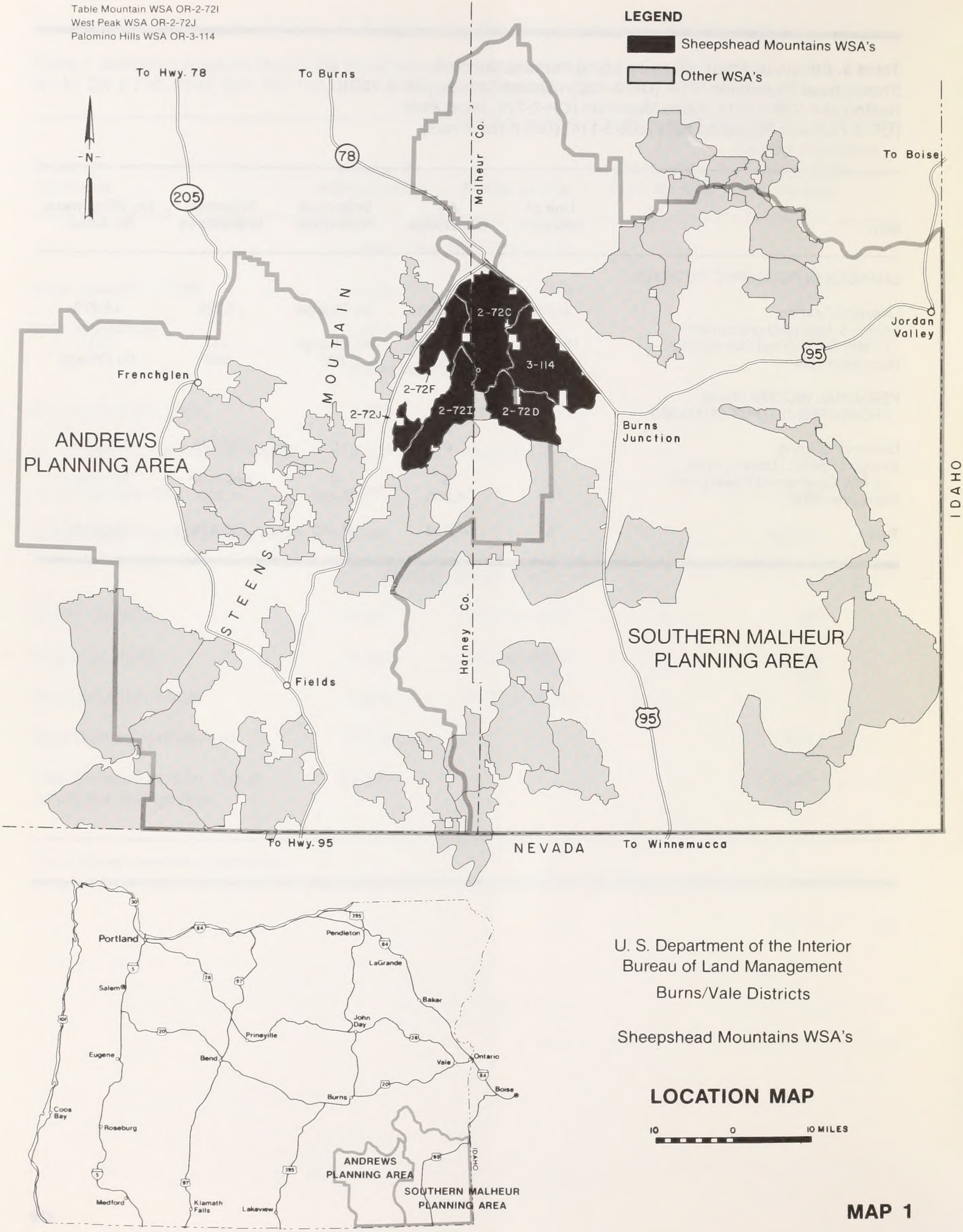
[1] Includes temporary nonrenewable use (see narrative).

Table 8. Effects of Alternatives on Local Personal Income, Sheepshead Mountains WSA (OR-2-72C) Wildcat Canyon (OR-2-72D), Heath Lake (OR-2-72F), Table Mountain (OR-2-72I), West Peak (OR-2-72J) and Palomino Hills (OR-3-114) (l98l price levels)

Item	Unit of Measure	All Wilderness	Enhanced Wilderness	Proposed Wilderness	No Wilderness/ No Action
CHANGES IN RESOURCE OUTPUTS					
Livestock Grazing	AUMs	No Change	No Change	+7,229	+8,879
Energy & Mineral Development:					
10-MW Geothermal Powerplants	Number	No Change	No Change	+1	+1
Recreation Use	RVD	-100	-200	-100	No Change
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES					
Livestock Grazing	$	0	0	+86,748	+106,548
Energy & Mineral Development:					
10-MW Geothermal Powerplants	$	0	0	Unknown	Unknown
Recreation Use	$	-1,200	-2,400	-1,200	0
Total	$	-1,200	-2,400	+85,548	+106,548

Sheepshead Mountain WSA OR-2-72C
Wildcat Canyon WSA OR-2-72D
Heath Lake WSA OR-2-72F
Table Mountain WSA OR-2-72I
West Peak WSA OR-2-72J
Palomino Hills WSA OR-3-114



U. S. Department of the Interior
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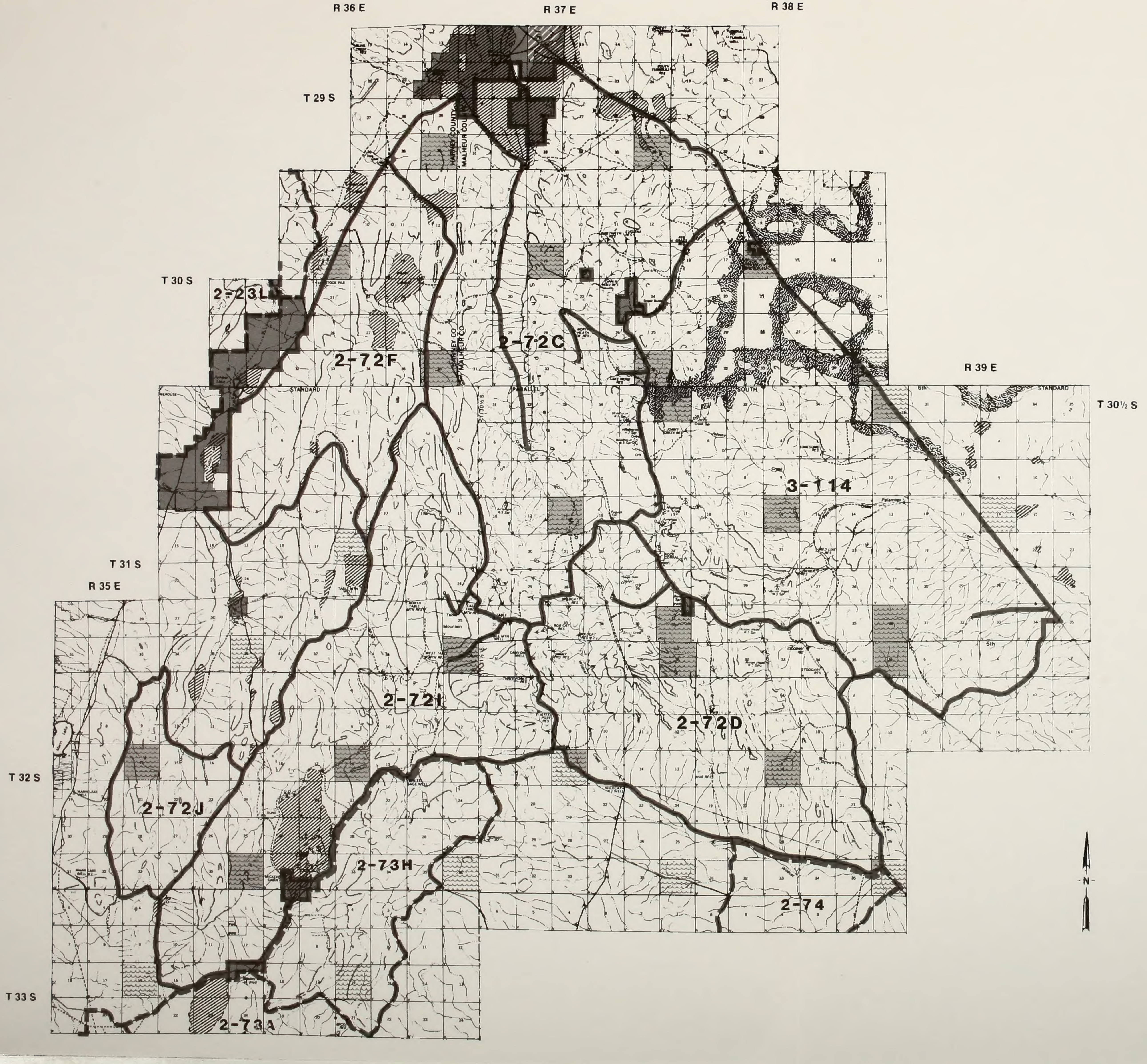
Burns/Vale Districts

Sheepshead Mountains WSA's

LOCATION MAP

MAP 1



Sheepshead Mountain WSA OR-2-72C
Wildcat Canyon WSA OR-2-72D
Heath Lake WSA OR-2-72F
Table Mountain WSA OR-2-72I
West Peak WSA OR-2-72J
Palomino Hills WSA OR-3-114

LEGEND

- ▒ BLM Land Studied Under Section 202 of FLPMA (Other BLM Land in WSA Studied Under Section 603 of FLPMA)
- ━ Wilderness Study Area Boundary
- ━ ━ Boundary of Adjacent Wilderness Study Areas
- ☐ Bureau of Land Management
- ▨ State
- ■ Private
- ▤ BLM Surface-State or Private Subsurface (Split Estate)
- ▩ Edge of Lava

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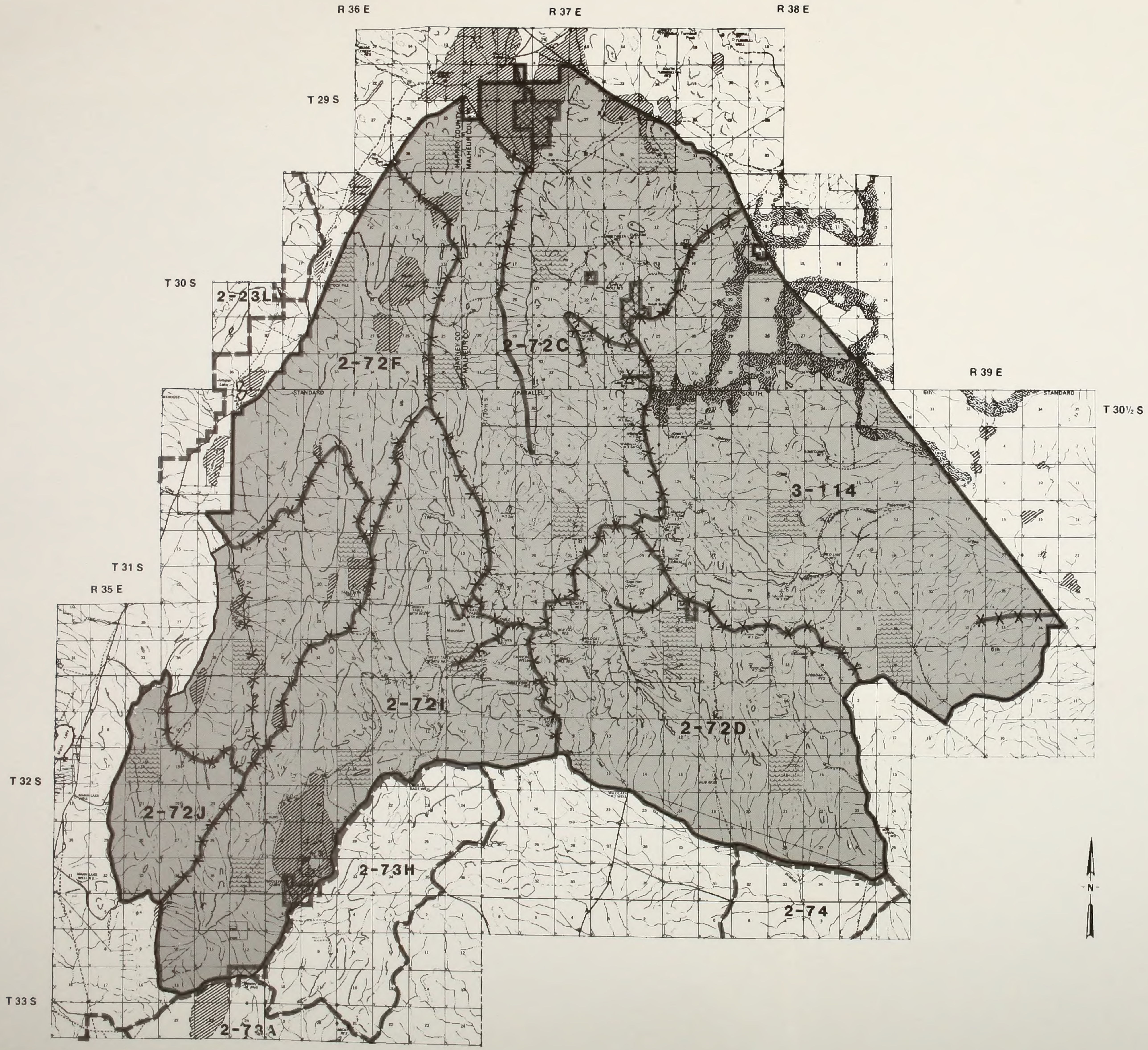
Sheepshead Mountains WSA's

LAND OWNERSHIP

1 0 1 2 3 MILES

MAP 2



Sheepshead Mountain WSA OR-2-72C
Wildcat Canyon WSA OR-2-72D
Heath Lake WSA OR-2-72F
Table Mountain WSA OR-2-72I
West Peak WSA OR-2-72J
Palomino Hills WSA OR-3-114

— Wilderness Study Area Boundary
- - Boundary of Adjacent Wilderness Study Areas
▢ Recommended Suitable for Wilderness
▨ Non-Federal Land within Recommended Wilderness
▤ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness
✕✕ Recommended Road Closure

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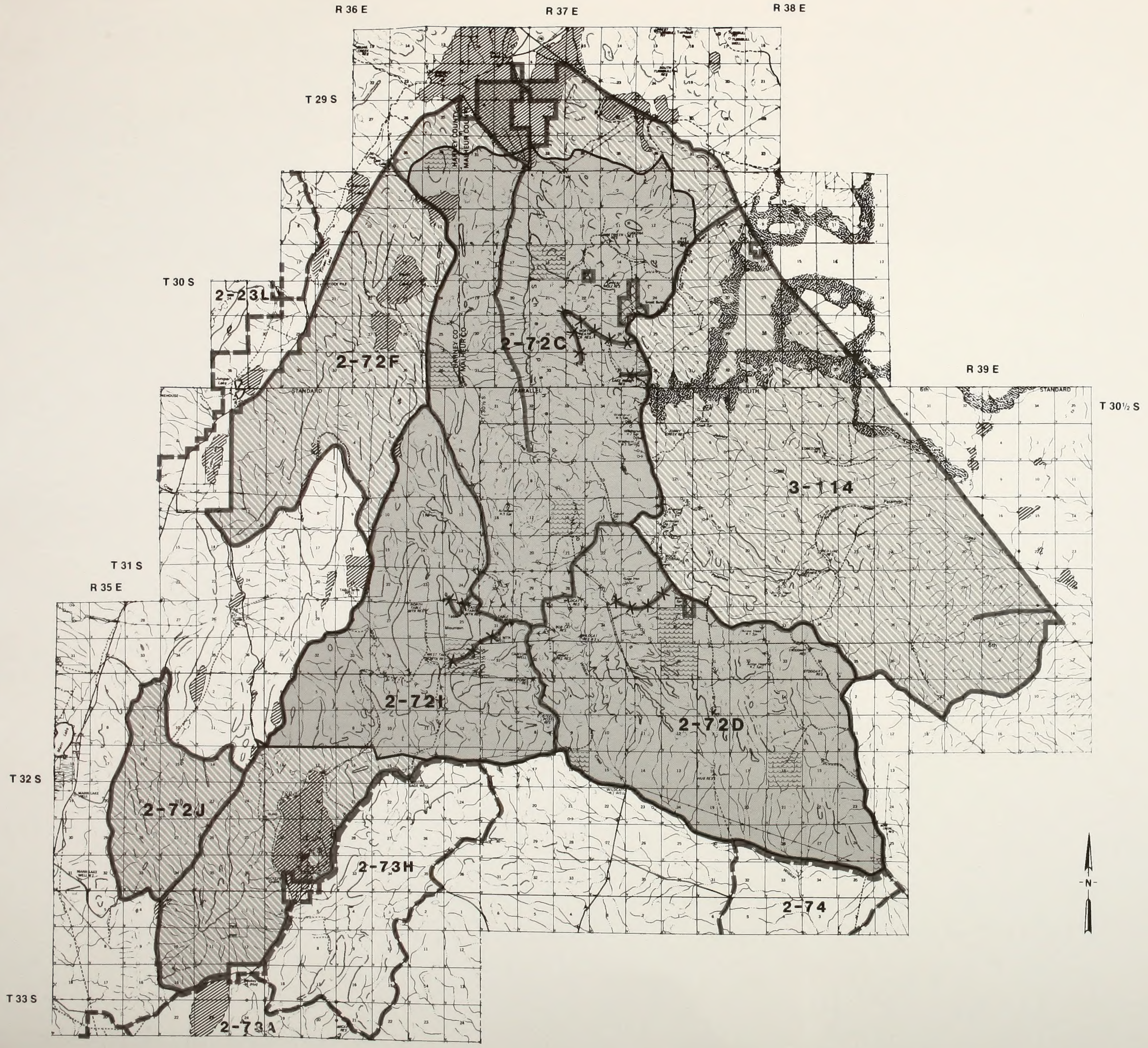
Sheepshead Mountains WSA's

ENHANCED ALTERNATIVE

1 0 1 2 3 MILES

MAP 3



Sheepshead Mountain WSA OR-2-72C
Wildcat Canyon WSA OR-2-72D
Heath Lake WSA OR-2-72F
Table Mountain WSA OR-2-72I
West Peak WSA OR-2-72J
Palomino Hills WSA OR-3-114

▬ Wilderness Study Area Boundary
- - Boundary of Adjacent Wilderness Study Areas
▢ Recommended Suitable for Wilderness
▨ Recommended Non-suitable for Wilderness
▩ Non-Federal Land within Recommended Wilderness
▤ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness
✕✕ Recommended Road Closure

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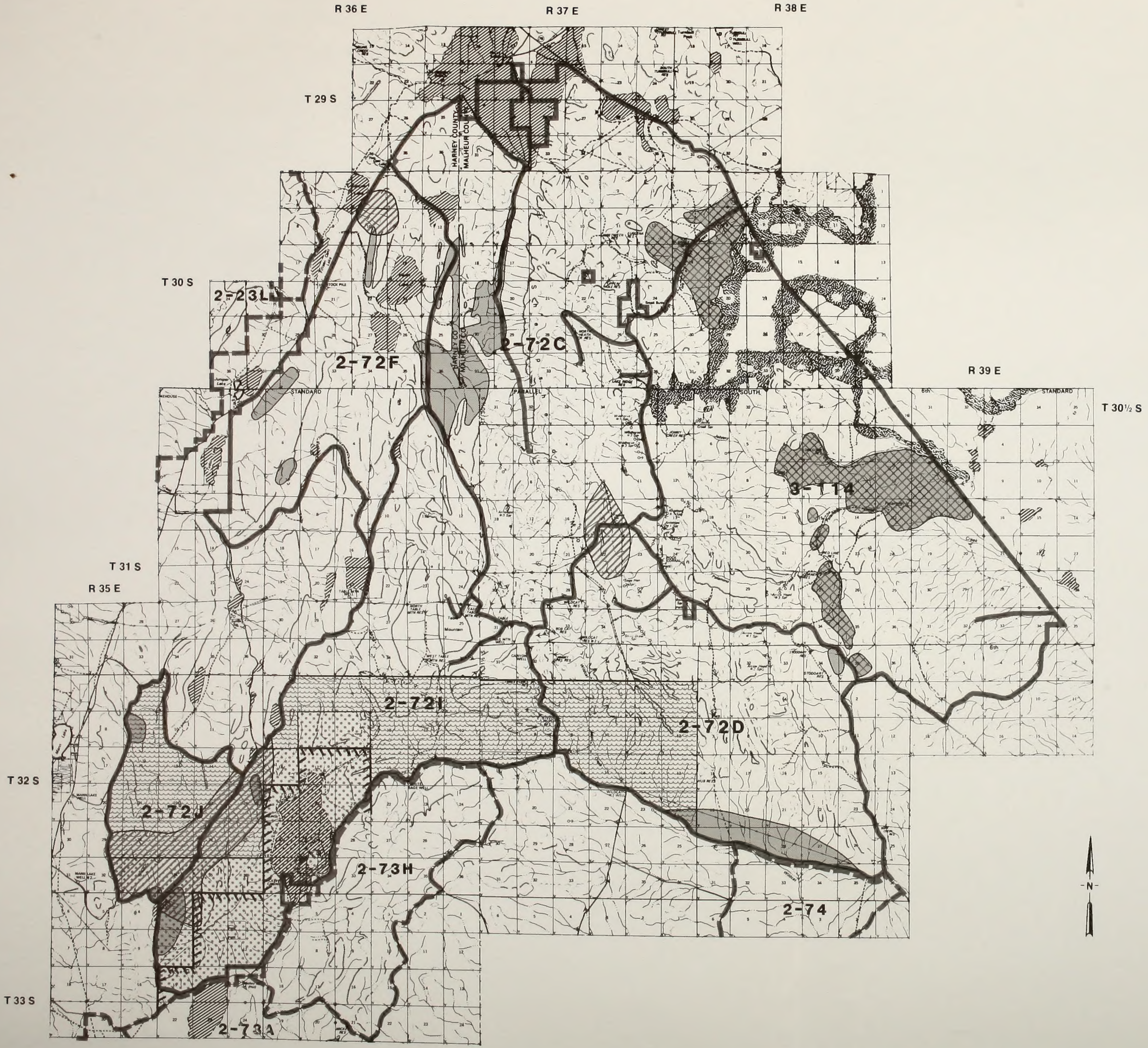
Sheepshead Mountains WSA's

PROPOSED ACTION

1 0 1 2 3 MILES

MAP 4



Sheepshead Mountain WSA OR-2-72C
Wildcat Canyon WSA OR-2-72D
Heath Lake WSA OR-2-72F
Table Mountain WSA OR-2-72I
West Peak WSA OR-2-72J
Palomino Hills WSA OR-3-114

- ▨ **Portion of WSA within known Geothermal Resource Area**
- ▤ **Moderate Potential (MB) for Geothermal Resources**
- ░ **High Potential (HD) for Geothermal Resources**
- ▩ **Moderate Potential (MB) for Diatomite**
- ▨ **Moderate Potential (MB) for Gold, Silver, Copper and Mercury**
- ▦ **Moderate Potential (MB) for Zeolites**

Entire WSA:
Moderate Potential
(MB) for Oil and Gas

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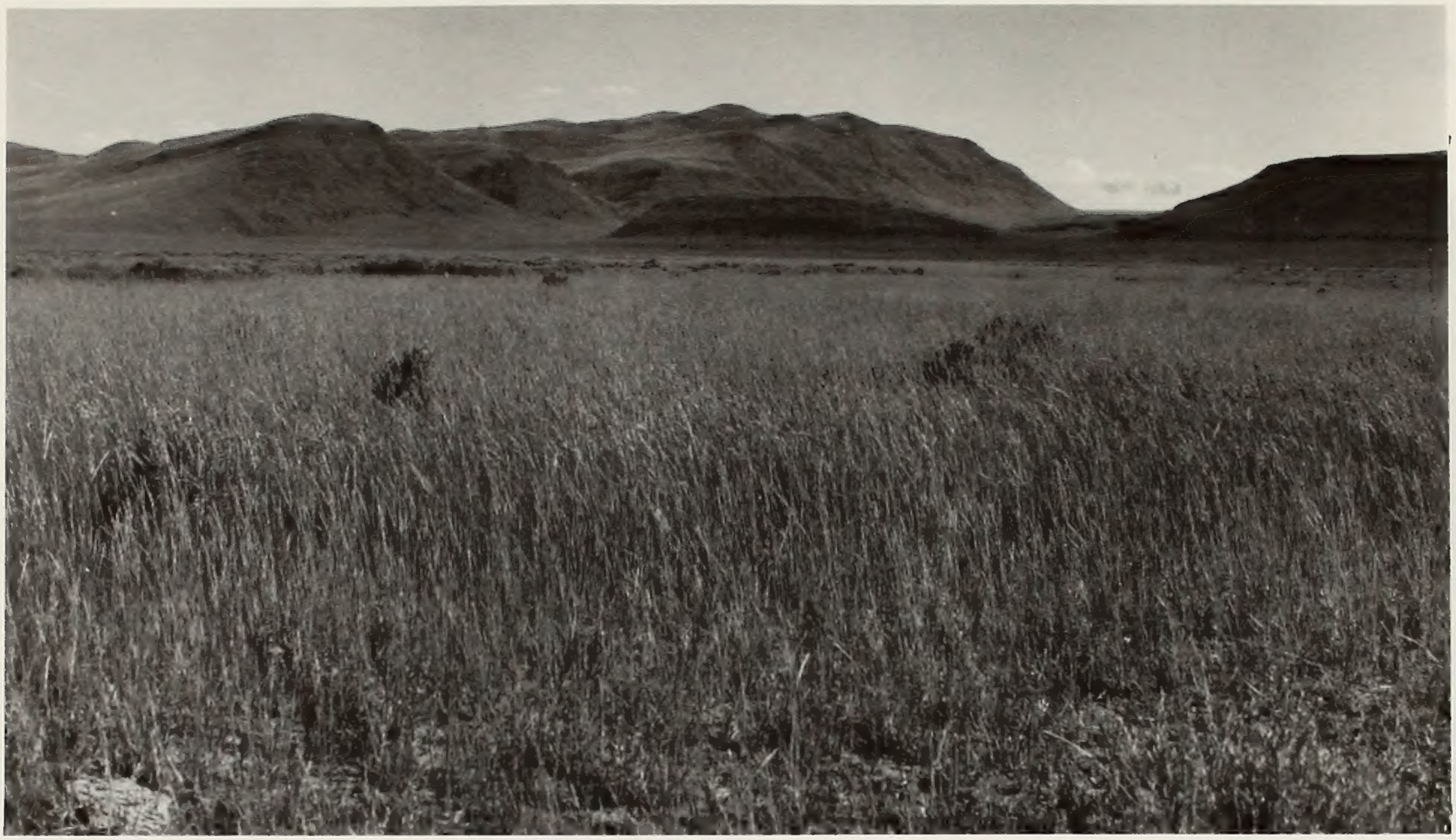
Sheepshead Mountains WSA's

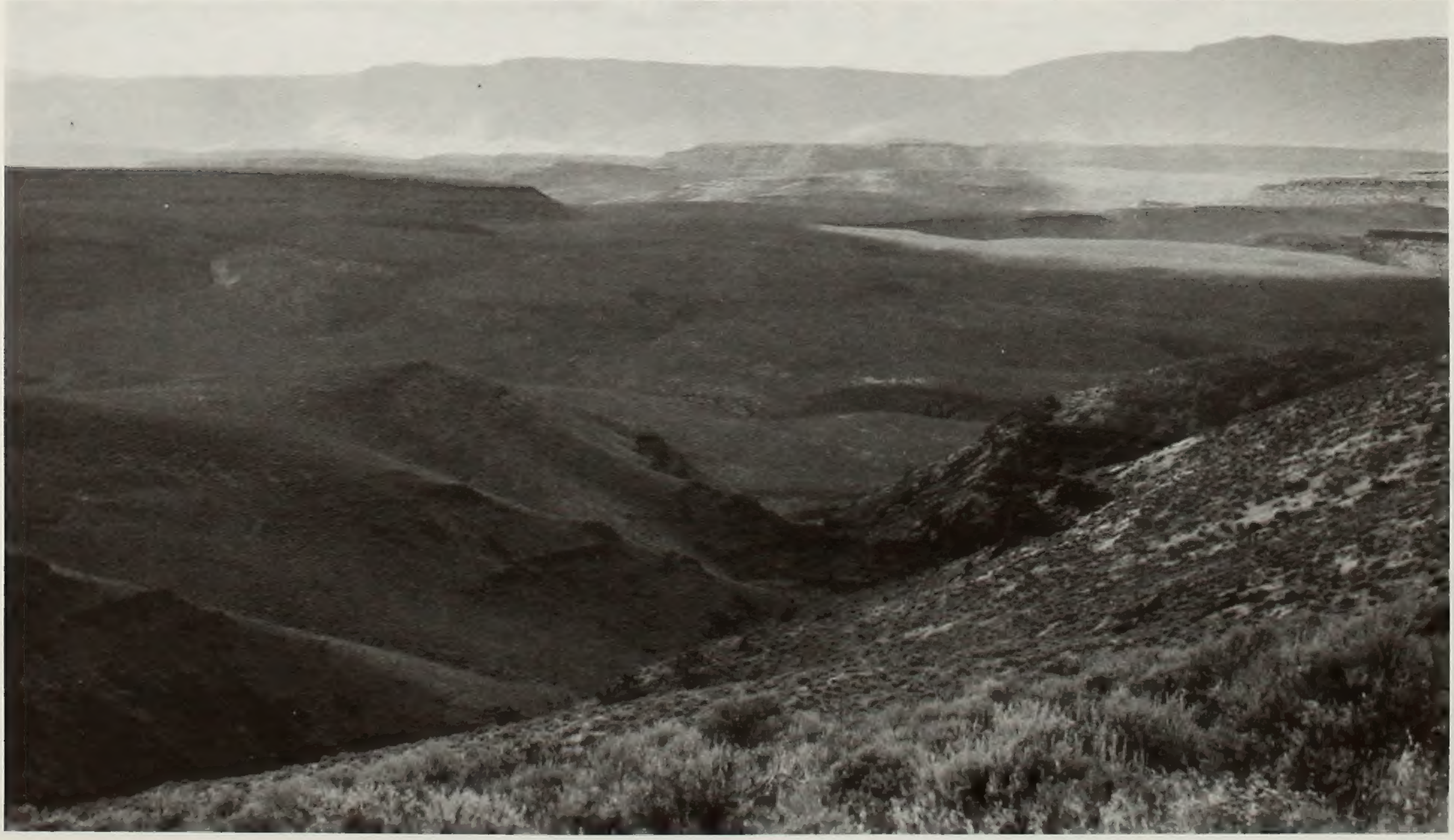
MODERATE OR HIGH POTENTIAL
MINERAL OR ENERGY RESOURCES

1 0 1 2 3 MILES

MAP 5



Sheepshead Mountains WSA, OR-2-72C. Taken from private land on the northwest side of the study area looking southeast. Much of the area in the foreground is recommended as suitable under the enhanced alternative (nonsuitable under the proposed action alternative) while ridgelines are recommended suitable under both the enhanced and proposed action alternatives. The main ridge of the Sheepsheads rises to an elevation of 6,289 feet. June 1983.



Sheepshead Mountains WSA, OR2-72C. This view, looking west, shows the drainage cutting through a narrow canyon. With the exception of the large ridgeline in the background (part of Steen Mountains) all of the terrain in this photo is within the Sheepsheads group and is recommended suitable under the enhanced alternative, and all of the foreground and most of the middle ground as suitable under the proposed action alternative. September 1983.

Wildcat Canyon WSA, OR-2-72D. Looking northwest from a ridgeline dividing two drainages. Within the area recommended suitable under the enhanced and proposed action alternatives. This view is representative of the central portion of the study area. The rolling plateau country is deeply cut by a number of intermittent drainages. September 1983.

Wildcat Canyon WSA, OR-2-72D. Looking southeast showing the plateau rapidly dropping along the southern portion of the WSA (the lower flatland in the midground is outside the WSA). All of the rugged terrain in the foreground is within the area recommended suitable under the enhanced and proposed action alternatives. This shows one of the many deep canyons in the study area. September 1983.

Heath Lake WSA, OR2-72F. The north central portion of the study area looking northwest (the ridgeline in the background is the northern end of the Steens Mountain and is outside the WSA). Health Lake and the ridgeline to the west are easily visible. Within the area recommended suitable under the enhanced alternative and nonsuitable under the proposed action alternative. September 1983.

Heath Lake WSA, OR-2-72F. The north end of the WSA looking north from the ridge south and west of Heath Lake (right to center). (The area in the background is not within the study area.) Within the area recommended suitable under the enhanced alternative and nonsuitable under the proposed action alternative. September 1983.

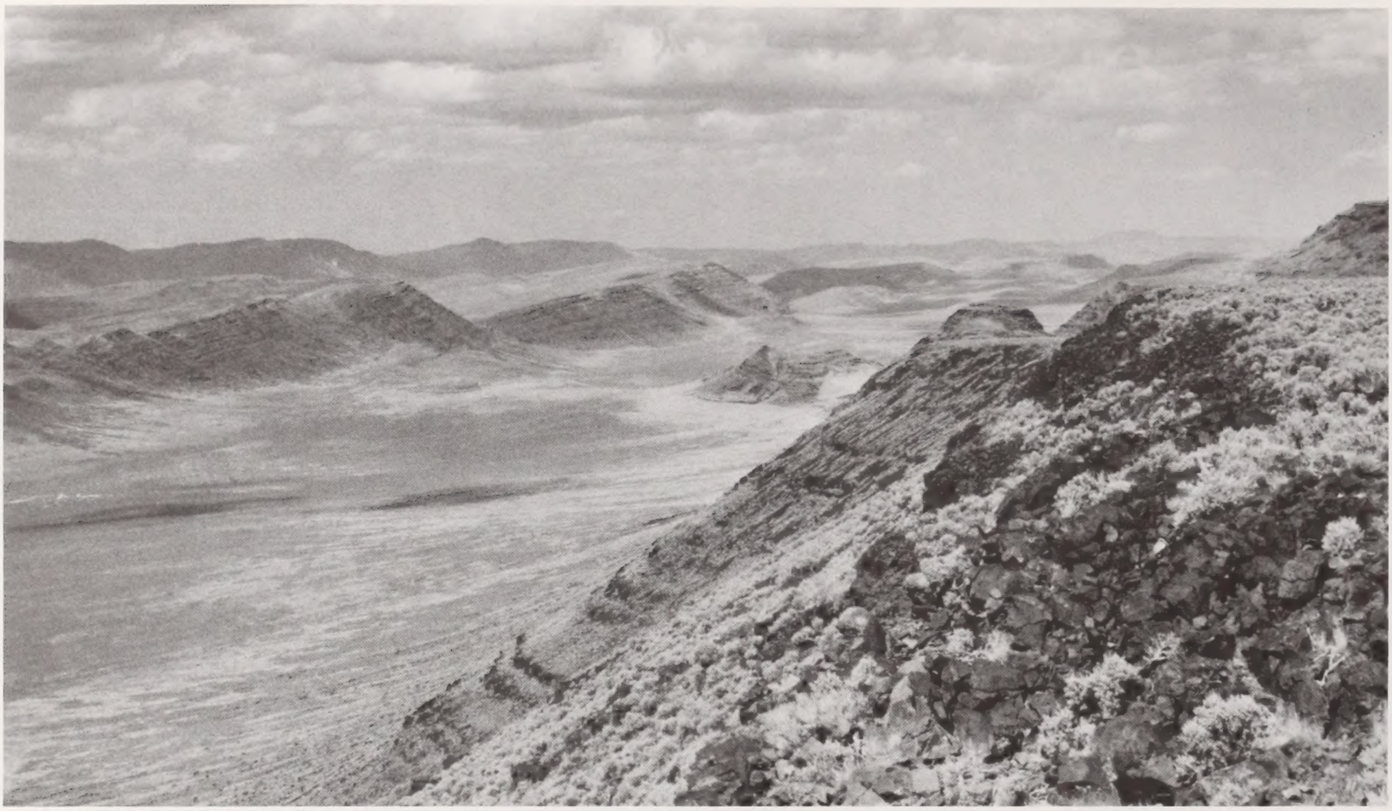


Table Mountain WSA, OR-2-72l. Looking north from the top of the ridgeline nea the western boundary. The ridge in the foreground and part of the basin are recommended suitable for wilderness under the enhanced and proposed action alternatives. This shows the typical terrain in the western portion of the Sheepshead complex. Within the basin on the left is the boundary between the Table Mountain WSA and the Sulphur Springs area. The ridgeline on the left edge of the basin lies along the eastern edge of the Sulphur Springs area. The large ridgeline in the background on the left side is the northern end of Steens Mountains. September 1983.

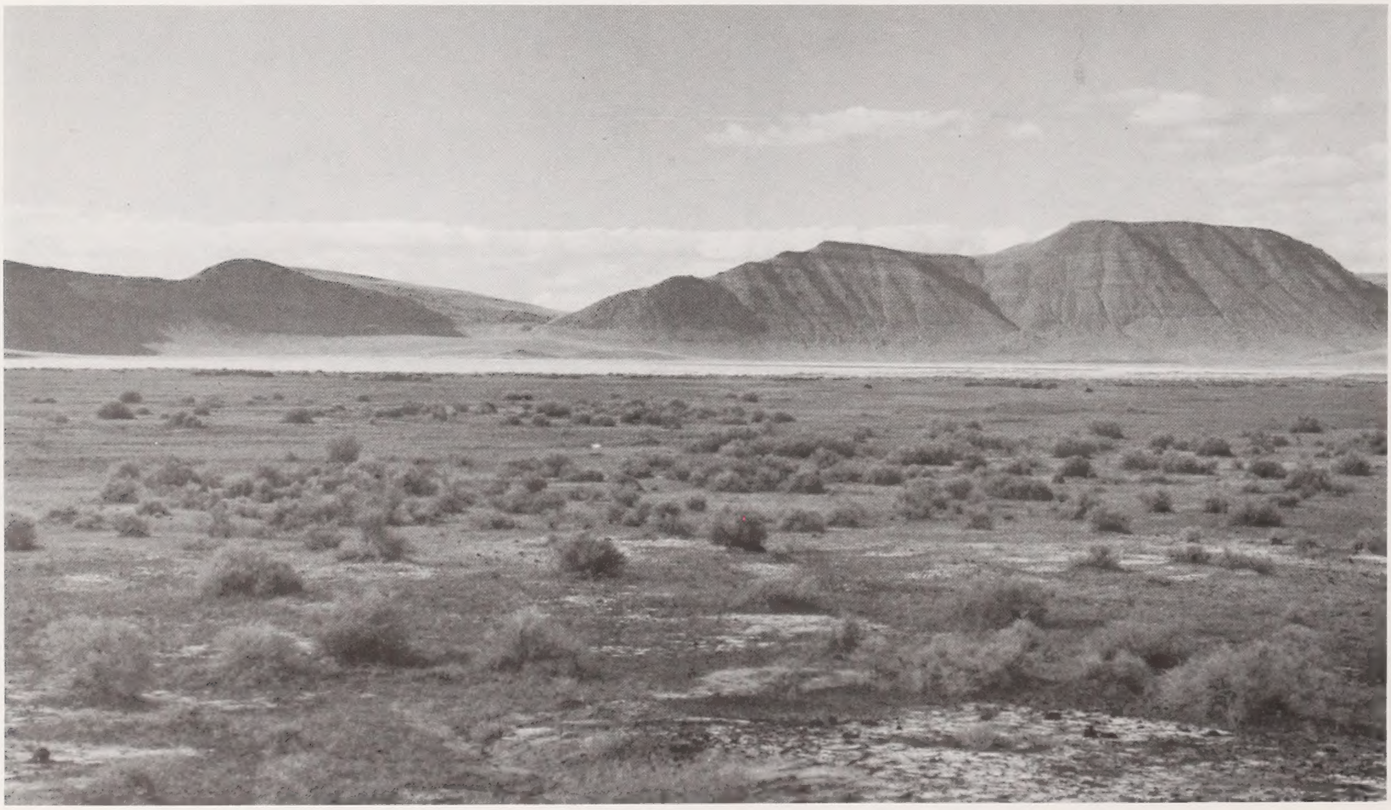


Table Mountain WSA, OR-2-721. Looking north from the southern boundary road in Mickey Basin (the lowest point in the study area and the entire Sheepshead Mountains group). Showing part of the ridgeline surrounding the basin. The light colored area at the base of the ridge is a playa. This portion of the study area is recommended as suitable under the enhanced alternative and nonsuitable under the proposed action alternative. April 1984.

West Peak WSA, OR-2-72J. Looking across the northern end of the study area to the southeast from the basin east of the ridgeline. The hill on the right side is within the West Peak WSA, while the hills in the background (center and left) are in the adjacent Table Mountain WSA (2-72I). Within the area recommended suitable under the enhanced alternative and nonsuitable under the proposed action alternative. September 1983.

West Peak WSA, OR-2-72J. Looking south along the ridgeline from the basin east of the ridge. The area is recommended suitable under the enhanced and nonsuitable under the proposed action alternative. The peak in the background rises over 1,900 feet above the basin. The steep ridgeline offers challenging day hiking and scenic views of the Steens and Sheepshead Mountain areas. September 1983.

Palomino Hills WSA, OR-3-114. Looking south into Palomino Creek Canyon in the southwest portion of the WSA. Within the area recommended suitable under the enhanced and nonsuitable under the proposed action alternative. September 1983.

Palomino Hills WSA, OR-3-114. Looking southeast across the hills in the southern portion of the WSA. Within the area recommended suitable under the enhanced and nonsuitable under the proposed action alternative. September 1983.

Appendix to the Wilderness Environmental Impact Statement for Oregon

Winter Range Wilderness Study Area (OR-2-73H)

1. Introduction

General Description of the Study Area

The Winter Range Wilderness Study Area (WSA) is located about 70 miles southeast of Burns (20 miles southwest of Burns Junction and U.S. Highway 95) in Harney and Malheur Counties (see Map 1). It is about 6 miles east of the county road which runs along the east side of Steens Mountain from State Highway 78 at Folly Farm to Fields.

The study area contains 15,440 acres of public land. Within the WSA is one 640-acre parcel of split-estate land. The study area is 9 miles long and averages about 3 miles in width (see Map 2). The boundary of the study area is formed almost entirely by low standard, BLM dirt roads, although two small parcels of private land border the area on the western side.

The WSA contains several distinct topographic features. A steep escarpment averaging about 500 feet high runs along the entire west-central side of the study area. To the west and below this ridge lies a basin area. Portions of both the Alvord Desert Basin and the Mickey Basin are included in this part of the study area. Along the western boundary, within the Mickey Basin portion of the area, the WSA reaches its lowest elevation at 3,924 feet.

Near the center of the WSA, the plateau area east of the escarpment rises to a height of 5,122 feet, the highest point in the study area. From the top of the escarpment, the landscape on the plateau slopes gradually downward to the southeast, and consists of gently-rolling terrain. The eastern portion of the study area contains a small, usually dry, playa lakebed which lies near the boundary.

The dominant vegetation type within most of the WSA is sagebrush-bunchgrass. Another major vegetation type typical of a desert basin environment is the salt desert shrub. This type includes greasewood, shadscale, spiny hopsage, budsage, saltgrass, and a variety of grasses and forbs normally associated with saline/alkaline soils.

Interrelationships

The Winter Range WSA is adjacent, on two sides, to two other wilderness study areas: Table Mountain WSA (OR-2-72I) on the north side and East Alvord WSA (OR-2-73A) on the west. The three WSAs are separated by dirt roads. The roads which separate these areas are used and maintained by BLM and livestock operators; they are also used by recreationists.

Some 50 acres of the southwest corner of the Winter Range WSA is part of the 560-acre Mickey Basin Research Natural Area (RNA) (see Map 2). The RNA includes a stand of winterfat in good condition. The RNA was designated to protect the area for research and educational purposes.

The WSA is located within the Oregon Department of Fish and Wildlife's (ODFW) Whitehorse Wildlife Management Unit which contains 4,882-square-miles of land. The WSA supports few deer (an estimated 25 during the winter and 10 during the summer) and 10 antelope yearlong.

ODFW management objectives for the Whitehorse Wildlife Management Unit are 5,500 mule deer and the maintenance of naturally-occurring nongame species populations at self-sustaining levels. ODFW has also proposed the reintroduction of California bighorn sheep in the nearby Sheepshead Mountains. A population of 200 animals is expected through natural population increase after the initial release. Bighorns released could range into the WSA. The proposed action for this WSA conforms with ODFW's management objectives for game and nongame wildlife species.

The WSA is within the Alvord-Tule Springs Wild Horse Herd Management Area (HMA). Management of the HMA will not be significantly affected by any of the alternatives and therefore, impacts to wild horses will not be discussed further.

Harney County and Malheur County have not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study and EIS planning, scoping and public review process. These issues concern both the effects of wilderness designation on existing and potential land uses or resources in the WSA, as well as the effects of existing and potential land uses or resources on wilderness values. Land use or resource conflicts raised as issues specifically for this WSA include:

- impact on wilderness values;
- impact on geothermal and mineral development;
- impact on livestock grazing use levels and management;
- impact on the control of wild horses in the area (see Statewide EIS volume); and
- impact on economic value of existing and projected resource outputs and local personal income derived from them.

No other issues specific to this WSA were raised by BLM or the public.

2. Description of Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made.

The following alternatives are analyzed:

- all wilderness
- no wilderness/no action (proposed action)

An enhanced wilderness alternative, which was raised in public comments and would recommend combining the Winter Range Study Area with two adjacent WSAs, is not analyzed. Combining the Winter Range WSA with the study area to the north (Table Mountain 2-72I) is not feasible, because of the significance of the boundary road which separates the two areas. This road (commonly referred to as the Mickey Hot Springs Road) provides access to the southern end of the Sheepshead Mountains area as well as the eastern portions of the Alvord Desert region. It is used primarily by grazing operators for checking livestock, wells and range improvements. However, BLM personnel, recreationists and private landowners also use the road.

It is not feasible to close the road to the south, dividing the Winter Range WSA from the East Alvord Study Area (2-73A). Although this road is not as well used as the Mickey Hot Springs Road, it is used by grazing operators, BLM personnel and recreationists. Combining these two WSAs would not substantially improve the manageability or wilderness qualities of either study area.

An enhanced wilderness alternative which would consider acquisition of the mineral estate of the split-estate lands or the private property around the perimeter of the area is not analyzed because it would not be substantially different from the all wilderness alternative.

A partial alternative is not analyzed because there are no opportunities to eliminate conflicts by recommending a portion of the study area as suitable and still retain the area's wilderness qualities.

All Wilderness

The all wilderness alternative would recommend all 15,440 acres of public land in the study area suitable for wilderness (see Map 2). For purposes of analysis, it is assumed the mineral estate of the split-estate lands would not be acquired.

Energy and Mineral Development Actions

Wilderness designation would close 14,800 acres of public land within the WSA to all forms of appropriation under mining and mineral leasing laws. However, the one section of 640 acres of split-estate land would remain open to mineral exploration and development.

The split-estate lands are not located in an area with high mineral potential and there is no evidence of moderate potential for energy or mineral occurrence. Therefore, no exploration or development of the split-estate lands is predicted in the foreseeable future.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. No wildlife projects are proposed.

Livestock Management Actions

Livestock grazing use would remain at the current estimated level of 604 AUMs which includes 148 AUMs of temporary nonrenewable use. This temporary use could become permanent depending on the results of monitoring. The season of use is December 1 to April 15.

The 3 miles of ways would be closed to motorized vehicle use. Monitoring livestock by this means would, therefore, be precluded.

Maintenance of existing fences could be done on foot or by horseback and pack animals, but reservoirs would require heavy equipment access on 3 miles of ways approximately once every 10 years. White Sage Well, located on the very edge of the WSA, uses an electric generator to pump water and requires vehicle access on 50 feet of way for maintenance every 2 years. No new range improvements are projected.

Recreation Management Actions

The entire 15,440-acre WSA would be closed to motorized vehicle use, including 3 miles of ways. Current recreational use is estimated to be less than 100 visitor days per year. Most recreation utilizes vehicles for general access into the area (via the northwest boundary road). Little use occurs on the 3 miles of ways which enter the WSA.

No Wilderness/No Action (Proposed Action)

The no wilderness/no action alternative would recommend the entire WSA nonsuitable as wilderness. It represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

All of the 15,440 acres in the WSA would be open to energy and mineral exploration and development. The WSA includes 5,166 acres with high potential for the occurrence of geothermal resources and 9,634 acres which have a moderate potential for the occurrence of geothermal resources. There is abundant direct and indirect evidence for the high potential geothermal resource. Because of this high potential, exploratory temperature gradient wells could be drilled at 60 locations, temporarily disturbing 16 acres. Two miles of temporary cross-country travel to the drill pads would result in an additional 2 acres of surface disturbance. The temperature gradient wells in this area would likely be shallow (approximately 500 feet in depth) and would utilize truck-mounted drilling equipment and portable mud pits.

If the exploration results were favorable, one 10-megawatt geothermal power plant could be built in the western half of the WSA. The plant and geothermal collection field would utilize 60 acres. A 2.5-mile transmission line and access road would disturb 11 acres. A total of 89 acres, which includes exploration, would be disturbed by geothermal activities.

Aside from abundant road aggregate sources, no known mineral deposits occur within the WSA. No mineral development actions are proposed.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals. The primary manner in which habitat is managed to support existing wildlife populations is through close coordination with the livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. No wildlife projects are proposed.

Livestock Management Actions

Livestock grazing use would remain at the current estimated level of 604 AUMs which includes the 148 AUMs of temporary nonrenewable use. This temporary use could become permanent depending on the results of monitoring. The season of use is December 1 to April 15.

Vehicle use for livestock management and maintenance would continue on 3 miles of ways, involving approximately 10 trips per year during the grazing season. Use of heavy equipment would be required every 10 years to maintain reservoirs and every 2 years to service White Sage Well. No new range improvements are projected.

Recreation Management Actions

Vehicle-oriented recreation use could continue in the entire WSA, including the 3 miles of ways. Current recreational use is estimated to be less than 100 visitor days per year. Most recreation utilizes vehicles for access and occurs around Mickey Hot Springs, which is located in the adjacent East Alvord WSA. The vehicle use is primarily for sightseeing along boundary roads and occasional access for hunting on the 3 miles of ways.

Summary

Table 1 summarizes the projected management actions under each alternative. Table 2 summarizes the environmental consequences of each alternative.

3. Affected Environment

This section discusses only those activities or resources which influence the character of the study area, or that may be affected by the alternatives.

Wilderness Values

Naturalness

The Winter Range WSA appears to be in a relatively-natural condition. Most of the developments can be seen from only a very small portion of the WSA.

There are eight developments in the Winter Range WSA: three reservoirs, one well, two fences totaling 1.5 miles, and two ways totaling 3 miles in length. These developments influence about 3 percent of the WSA.

The water developments are scattered around the perimeter of the area. They are relatively minor and are fairly well screened by location and adjacent topography. The vehicle ways are in the west side of the study area and do not have a major influence on the area due to terrain and vegetation. Like the vehicle ways, the fences enter the WSA from the western boundary and their influence on the study area is minimal.

Features and activities outside the area do not detract from the wilderness character of the study area. The boundary roads have only a small effect on the area's wilderness values because they pass through flat or gently-sloping terrain which decreases their visibility. Other outside sights, such as small water developments, have a very minor influence on the area.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

Opportunities for solitude in the Winter Range WSA are outstanding. The size and topography of the WSA enhance the opportunities for solitude. Much of the WSA provides topographic screening, primarily along the main ridgeline which runs north and south through the study area. Scattered ridges and buttes in the gently-rolling eastern portion of the area provide some topographic screening and enhance solitude values in this part of the WSA.

Military jet aircraft frequently use the area for low altitude training flights. During the daylight hours of high use periods, there may be as many as 15 low-level flights daily. The influence of these flights on a visitor's perception of solitude is quite temporary, but extreme for a short period of time (1 minute or less). These flights do not have a significant, long-lasting, adverse effect on a visitor's opportunity to find solitude.

The area does not provide any outstanding opportunities for primitive recreation. Opportunities for day hiking, backpacking, camping, hunting, horseback riding and sightseeing exist, but are not considered to be of outstanding quality.

Special Features

There are several features within the Winter Range WSA which add to the value of the area as wilderness, including vegetation, wild horses and scenery.

The size and condition of the winterfat community, for which the Mickey Basin RNA was designated, is uncommon in Oregon. The site contains a nearly pure stand of winterfat in good condition. Three plant species of special interest also occur within the WSA (see Vegetation section for more information).

Northern kit fox, on the Oregon Department of Fish and Wildlife List of Threatened Species, may range into the WSA but its actual presence has not been verified.

The scenery of the study area is most outstanding in the southwestern corner. The area that can be viewed covers the top of the Steens Mountain to the east side of the Alvord Basin.

Diversity in the National Wilderness Preservation System (NWPS)

According to the Bailey-Kuchler system of classifying ecosystems, the WSA is located in the Intermountain Sagebrush Province and the potential natural vegetation is saltbush-greasewood.

Six vegetative communities listed in the Basin and Range section of the Oregon Natural Heritage Plan occur in this WSA: bare playa and playa margin communities, greasewood/saltgrass community, shadscale/spiny hopsage/budsage community complex, winterfat community, big sagebrush/spiny hopsage community and big sagebrush/bluebunch wheatgrass.

The study area is within five hours' driving time of Boise, Idaho, a standard metropolitan statistical area with a population over 100,000.

Energy and Mineral Development

The geology, energy and mineral resources of the Winter Range WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, and correlating rock units in the WSA with similar environments in other areas known to contain mineral deposits. Technical details of the findings of the evaluation are in a report of the assessment of mineral resources, "Sheepshead Mountain Geologic Resource Area (GRA), Harney and Malheur Counties, Oregon," prepared by TERRA-DATA (a BLM contractor) and also in a BLM report on the assessment of mineral resources in the South Harney GRA.

The WSA is within the South Harney GRA which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level). A description of the rating system is provided in the Statewide EIS volume.

Table 3 shows the energy and mineral potential classifications in the study area. Map 3 shows where energy and mineral resources have high and moderate potential for occurrence in the WSA.

The surface rocks are composed of a mixture of Steens basalt and Steens Mountain volcanic series. These consist of numerous thin flows of olivine basalt, platy andesite and flow breccias, and rare interlayers of tuffs, with a cumulative thickness of several thousand feet. Locally, the area is overlain with semi-consolidated lacustrine (lake) tuffaceous sediments and ash flow tuffs. Also occurring are minor basaltic dikes or sills.

Energy Resources

A large portion of the study area falls within the Alvord Known Geothermal Resource Area (KGRA). Following legal subdivisions, the KGRA boundary covers most of the western side of the study area, including portions of the Mickey and Alvord Basins and part of the escarpment. Most of the western side of the WSA also has been rated as having a high potential for the occurrence of geothermal resources. Most of this portion lies within the Alvord KGRA. The rest of the

WSA has a moderate potential for the occurrence of geothermal resources. The area presently has one geothermal lease covering 640 acres. Lease stipulations prohibit impairment of wilderness values and lease renewal, if the area is designated wilderness.

The entire area has a moderate potential for oil and gas resources based on indirect evidence. There are no oil and gas leases in this area as of October 16, 1987.

Mineral Resources

Aside from abundant road aggregate sources, there are no known occurrences of mineral deposits within the WSA. There were no mining claims in the study area as of October 16, 1987.

Vegetation

The most extensive vegetative community in the Winter Range WSA is a complex where a big sagebrush/bunchgrass community and a shadscale/budsage community are intermittently dominant. This complex occurs all across the uplands of the WSA. These communities occur independently in some areas as well as in this complex.

The big sagebrush/bunchgrass community is the most dominant community. At the highest elevations, bluebunch wheatgrass occurs. The estimated successional stage is early to mid-seral. The probable potential natural community vegetation is big sagebrush, Indian ricegrass, squirreltail and spiny hopsage. Bluebunch wheatgrass would be a potential natural community species in the higher elevations on the north slopes.

The shadscale/budsage community occurs in the rocky, rolling hills just above the saline basins as well as in the complex. The estimated successional stage is early to mid-seral. The potential natural community includes shadscale, budsage and Indian ricegrass.

A greasewood/saltgrass community exists in the saline basins, along the edges of the playas and in the sandy areas. The estimated successional stage is early to mid-seral. The potential natural community contains alkali sacaton and Great Basin wildrye, with some greasewood and saltgrass.

There are very small areas containing a community of winterfat. The estimated successional stage is mid-seral. The potential natural community is primarily winterfat. Indian ricegrass, Nuttal's saltbush, creeping wildrye and squirreltail also occur in minor amounts. A portion of the Mickey Basin RNA, which was established to protect a representative part of the winterfat community, lies within this WSA.

Three plant species of special interest are located in the WSA. *Astragalus solitarius* (weak milkvetch) is a candidate for Federal listing as threatened or endangered and, according to the 1987 Oregon Natural Heritage Data Base (OHNDB), is "threatened throughout its range." Two State sensitive species, *Chaenactis macrantha* (large flowered chaenactis) and *Stipa speciosa* (desert needlegrass) are "threatened in Oregon, but more common or stable elsewhere."

Wildlife

There is little water available for wildlife in the Winter Range WSA during the warmer months. Water is available in seeps and springs just outside of the western edge of the WSA. Due to the lack of year-round water, only occasional use by mule deer and antelope occurs in the WSA.

Golden eagle, prairie falcon, great horned owl and American kestrel are some of the raptors found in the area. Other common wildlife species include coyote, black-tailed jackrabbit, least chipmunk, antelope ground squirrel, sage sparrow, Brewer's sparrow, horned lark and western rattlesnake. Chukars and sage grouse are present, but not abundant. Bushy-tailed woodrat, canyon mouse and long-eared myotis (bat) may be found near rimrocks.

Northern kit fox, on the ODFW's List of Threatened Species, may range into the WSA, but its actual presence has never been verified.

Watershed

There are no perennial streams or springs in the WSA.

Livestock Grazing

This WSA is located entirely within the Alvord grazing allotment winter pasture. Primary season-of-use is December 1 to April 15. Table 4 shows existing livestock use in AUMs.

Existing livestock developments consist of three reservoirs, one well and 1.5 miles of fence.

The grazing operator uses motor vehicles on the boundary roads for access to the allotment and on the 3 miles of ways. Most use is from December 1 to April 15 on the north and west boundary roads when daily trips are made to check three livestock wells adjacent to the WSA. Maintenance and management involves 10 trips per year, but horses are primarily used to move and gather livestock because of limited access.

Recreation Use

There is no recorded information on existing recreation use in the Winter Range WSA. It probably receives very little primitive recreation use. Whatever recreation use occurs would probably be vehicle-oriented for sightseeing and for access only along boundary roads and the 3 miles of ways. Although deer and antelope occasionally use the study area, hunting is poor.

Overall recreation use in the WSA is estimated to be less than 100 visitor days per year.

Local Personal Income

Livestock use at the current level of 604 AUMs and recreation use totaling less than 100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $7,248 for livestock grazing and $1,200 related to recreation use of the WSA, for an overall total of $8,448. The Statewide EIS volume discusses the term local personal income and how income figures have been derived.

4. Environmental Consequences

Introduction

This section discusses the environmental consequences of implementing each of the alternatives. Resources and activities not significantly affected by any of the alternatives are not discussed. The Statewide volume also discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness: 15,440 acres
Recommended nonsuitable for wilderness: 0

Impacts on Wilderness Values

All of the WSA would be designated wilderness, and wilderness values within the entire 15,440 acres of public land would be protected by legislative mandate. Wilderness values of naturalness, solitude, primitive and unconfined recreation, as well as special features including the winterfat community and the kit fox habitat would be retained. Wilderness designation would preserve a combination of low basins and high plateaus, including the northern reaches of the Alvord Desert Basin.

Naturalness

The naturalness of the area's topographic features (a long ridge with escarpment, low basins and dry playa lakebed) would be enhanced by prohibiting motorized vehicle use. Closure of 3 miles of ways, which influence approximately 265 acres (1.7 percent of the WSA) would allow the ways to revegetate. Within two to three growing seasons, the two parallel tracks would revegetate, making the ways substantially unnoticeable. The 3 miles of ways are in the southwestern portion of the WSA and provide access to one of three reservoirs. The other two reservoirs are located along boundary roads. The ways would receive vehicle use, to maintain the reservoir with heavy equipment, approximately once every 10 years. This infrequent amount of use would not prevent these ways from revegetating.

Solitude

Opportunities for solitude would be improved by elimination of motorized vehicle use on 3 miles of ways in the southwestern portion of the WSA. The topographic feature of the high plateau, with steep escarpment and lack of vehicular access, would provide a large expanse where people can hike and experience solitude without disturbance from vehicular use.

Primitive and Unconfined Recreation

Closure of 3 miles of ways to motorized vehicle use would increase opportunities for primitive and unconfined recreation such as hiking, backpacking, camping and horseback riding. The quality of hunting and sightseeing would be somewhat improved. Lack of perennial streams, springs and developed water sources limit the number of mule deer and antelope using the area and, therefore, would continue to limit big game-hunting opportunities.

Special Features

The potential for impacts by incidental OHV use to plant and animal communities and species of special interest would be reduced by closing 3 miles of ways.

Conclusion: Wilderness designation of the entire 15,440 acres would result in protection and enhancement of existing wilderness values.

Impacts on Energy and Mineral Development

Wilderness designation would close 14,800 acres to mineral entry. The 640 acres of split-estate lands would remain subject to mineral development.

Energy Development

Projected exploration and development for geothermal resources and oil and gas would be precluded on 14,800 acres. Exploration could occur on the 640-acre split-estate parcel, but is not anticipated due to the lack of direct evidence justifying an extensive exploration program on that parcel. Projected development of one 10-megawatt geothermal power plant would be precluded under wilderness designation.

Conclusion: Wilderness designation would preclude the development of one projected 10-megawatt geothermal power plant.

Mineral Development

No mineral development is expected because there are no minerals with moderate or high potential for occurrence in the WSA.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

No significant changes or influences would be introduced.

Vegetative composition, as described in the Vegetation section in the Affected Environment, would not substantially change. Ecological status, which is mainly in early to mid-seral stage, would remain the same. Utilization of key forage species would remain approximately 55 percent with a corresponding maintenance of residual ground cover.

The 3 miles of ways, once closed to vehicle use, would revegetate within approximately two to three growing seasons.

Conclusion: The 3 miles of ways totaling three surface acres would eventually revegetate naturally. Little or no change would occur to vegetation in the rest of the area.

Impacts on Wildlife

Wildlife habitat for a summer population of 10 deer and 10 antelope and a winter population of 25 deer and 10 antelope would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives. Wilderness designation would favor the reestablishment of bighorn sheep in the Sheepshead Mountains, including this WSA.

The closure of 3 miles of ways would have little impact on wildlife due to the light vehicle use.

Conclusion: Wildlife habitat would be maintained throughout the area.

Impacts on Livestock Grazing

Livestock grazing use would remain at the current estimated level of 604 AUMs which includes 148 AUMs of temporary nonrenewable use. This temporary use could become permanent depending upon the results of monitoring. The season of use would be December 1 to April 15.

Vehicle use for checking livestock and range management would be precluded on 3 miles of ways, with a slight increase in operator costs and some inconvenience.

Maintenance of the existing 1.5 miles of fences would be done on foot or by horseback and pack animals.

Heavy equipment, such as bulldozers and backhoes, would continue to be utilized to maintain the three reservoirs once every 10 years and the White Sage Well once every two years.

Conclusion: Livestock grazing would continue at 604 AUMs. Some inconvenience and increase in costs to livestock operators would result from closure of 3 miles of ways.

Impacts on Recreation Use

The entire 15,440 acres would be closed to motorized vehicle use, including 3 miles of ways. Vehicle-oriented recreation is very low and closing the vehicle ways would not have a measurable effect on the amount of motorized recreation use. Since most use in the WSA is attributable to hunting, which is poor, a negligible reduction of visitor days would be expected from the reduced access for hunters, but over time continue to be less than 100 visitor days per year.

Opportunities for primitive recreation would be maintained or enhanced. The quality of primitive recreation would be enhanced as a result of the elimination of vehicle use on ways. However, primitive recreation use levels are not expected to measurably increase.

Conclusion: Wilderness designation would likely result in a negligible net reduction in the area's overall recreation use, but remain at less than 100 visitor days per year. This reduction would primarily involve displacement of hunting use to other areas.

Impacts on Local Personal Income

Livestock grazing would remain at 604 AUMs. Overall recreation use would remain at less than 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be no net change from the current level.

Conclusion: Annual local personal income generated from resource outputs in the WSA would remain at approximately $8,500.

No Wilderness/No Action (Proposed Action)

Recommended suitable for wilderness: 0
Recommended nonsuitable for wilderness: 15,440 acres

Impacts on Wilderness Values

Under this alternative, the entire 15,440 acres would not be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation, and the area's special features would be subject to the effects of projected management actions, including energy development and continued motorized recreation use.

Naturalness

Continued vehicle use on the 3 miles of ways would maintain the impact of vehicle tracks upon naturalness on approximately 265 acres (1.7 percent of the WSA). Portions of the ways, which provide access to two reservoirs, are in drainages and are not readily noticeable. Most of this influence upon the area's naturalness occurs in the southwestern corner of the WSA.

Geothermal exploration, disturbing a total of 18 surface acres, would cause short-term and localized impacts to naturalness. Required reclamation and natural revegetation would leave little long-term evidence of disturbance to naturalness.

Geothermal development in the western half of the WSA (a 10-megawatt power plant, collection field, and 2.5 miles of access roads and transmission lines) disturbing 71 surface acres would indirectly influence naturalness on approximately 5,680 acres or 37 percent of the WSA. Most of this impact would be between the steep, western escarpment and the western boundary road.

Solitude

Continued vehicle use on 3 miles of ways and human activity associated with geothermal exploration and development would cause repeated short-term, local impairment on opportunities for solitude, particularly in the lower elevations of the western portion of the WSA.

Solitude in the higher elevation of the central ridge, the lower plateau slopes on the southeast and the playa lakebed on the east would remain relatively undisturbed. However, people going near the edge of the western escarpment would be subject to the impacts from sights and noise of geothermal development below.

Primitive and Unconfined Recreation

Vehicle use would continue on 3 miles of existing ways and new use would occur on 2.5 miles of constructed roads. Such use would intrude upon primitive, nonmotorized recreation opportunities such as hiking, backpacking, camping, hunting and horseback riding in the localized area around these ways and roads. These types of recreation would not be impacted in the remaining portion of the central plateau and the lower areas to the east.

Geothermal exploration and development in the western portion of the WSA would intrude on primitive and unconfined recreation and, in most instances, completely eliminate these types of opportunities in and around the areas of intensive development. Changes to the natural setting would cause visitors seeking primitive and unconfined recreation to avoid this area.

Special Features

Geothermal exploration would result in minimal, short-term disturbance of scenic qualities from developing temporary drill pads and cross-country access. Development of a projected geothermal power plant, disturbing approximately 89 surface acres in the western portion of the WSA, would primarily affect the vistas, scenery and vegetation. Construction of wells, pipelines, buildings, access roads and transmission lines would involve removal of vegetation, some movement of soil and other surface materials and placement of human developments out of context with the present characteristic landscape of the natural environment.

Potential impacts to special plant and animal species from projected geothermal exploration and development would be minimized or eliminated through mitigation applied to those activities.

Conclusion: In the absence of wilderness designation, projected activities and continued uses would directly and indirectly impair wilderness values over approximately 6,000 acres of the WSA with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

The entire WSA would remain open to mineral entry.

Energy Development

Geothermal exploration and development are projected on 5,166 acres of the WSA. Projected development of a 10-megawatt geothermal power plant would occur under this alternative.

Conclusion: There would be no impact to projected energy development.

Mineral Development

No mineral development is expected within the WSA. No mineral resources were found to have moderate or high potential for occurrence in the WSA.

Conclusion: There would be no impact on mineral development.

Impacts on Vegetation

The 3 miles of ways would not revegetate due to continued use. Minor vegetative disturbance from geothermal exploration would occur on 18 surface acres. However, geothermal development in the lower, western half of the WSA would remove vegetation from 71 surface acres. Impacts to the winterfat community and other special plants would be minimized or eliminated by mitigating lease stipulations.

Conclusion: Projected geothermal developments would remove ground cover on 71 acres. There would be no change to vegetation in the remainder of the WSA.

Impacts on Wildlife

Wildlife habitat for a summer population of 10 deer and 10 antelope and a winter population of 25 deer and 10 antelope would be maintained under the no wilderness alternative. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives.

Projected geothermal exploration and construction of a geothermal power plant and associated roads and transmission lines would disturb wildlife habitat over 89 surface acres. Water present just outside the western edge of the WSA could be critical to bighorn use during the warmer months; frequent road use plus other activities could disturb them if they become established in the area following reintroduction in the nearby Sheepshead Mountains.

Northern kit fox, if present, would probably not be affected by geothermal development. However, sedentary nongame species would be adversely impacted from habitat disturbance.

Conclusion: There would be minimal impact on wildlife values under this alternative. Bighorn sheep, if present, could be adversely impacted by geothermal development.

Impacts on Livestock Grazing

Livestock grazing use would remain at the current estimated level of 604 AUMs which includes 148 AUMs of temporary nonrenewable use. This temporary use could become permanent depending upon the results of monitoring. The season of use is December 1 to April 15.

Vehicle use involving approximately 10 trips per year for livestock management and maintenance would continue on 3 miles of ways in the WSA. Maintenance of the three reservoirs and one well with heavy equipment would also be allowed.

Conclusion: Livestock grazing would continue at 604 AUMs. Vehicle use would continue on all ways for managing livestock.

Impacts on Recreation Use

Primitive recreation would be subject to disturbance from other land uses such as continued vehicle use and geothermal development. Motorized recreation use would continue in the WSA, but would generally be limited by topography to 3 miles of ways and 2.5 miles of new roads. Overall, the area's recreation use level would continue to be less than 100 visitor days per year.

Conclusion: A negligible increase in vehicle-oriented recreation use combined with the influence of projected geothermal development would decrease primitive recreation use levels. Overall recreation use levels in the WSA would remain at less than 100 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 604 AUMs. Projected energy and mineral development would amount to one 10-MW geothermal powerplant. Overall recreation use would remain at less than 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be no net change from the current level, plus an unknown level of increase attributable to the projected energy development.

Conclusion: Annual local personal income generated from resource outputs in the WSA would remain at approximately $8,500.

Unavoidable Adverse Impacts of the Proposed Action

Under the Proposed Action (No Wilderness/No Action) continued motorized vehicle use along 3 miles of ways would locally impair wilderness values. Geothermal exploration would lead to unavoidable adverse impacts to wilderness values on approximately 18 surface acres, and construction of geothermal developments would impact approximately 71 surface acres. Visually, approximately 6,000 acres would be adversely impacted under the no wilderness alternative.

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity

Under the Proposed Action, all short-term uses would continue and future development options, including projected geothermal exploration and development, would remain open. Long-term productivity of wilderness values would be directly lost on 71 surface acres and indirectly on 5,680 acres from geothermal development, with further declines from other uses over the long term.

Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, projected geothermal development would result in an irreversible commitment of the wilderness resource on 71 surface acres and indirectly on 5,680 acres, with negligible amounts of the geothermal heat resource being irretrievably committed.

5. Wilderness Manageability and Rationale for the Proposed Action

Manageability of the Area as Wilderness

The Winter Range WSA would be manageable as wilderness under the all wilderness alternative. The potential manageability problems of the study area are not substantial. Potential development of adjacent private lands could not be controlled and would have an adverse effect on the natural appearance and opportunities for solitude within the WSA. However, there are no known plans for development on these parcels.

Rationale for the Selection of theProposed Action

The no wilderness/no action alternative is the proposed action in order to retain the options for development of resources in the area. Although the area meets the minimum criteria for designation as a wilderness study area and contains special wilderness features, it also has moderate and high potential for the occurrence of geothermal resources. Part of the study area lies within the Alvord KGRA and has a high geothermal potential.

6. Summary and Analysis of Public Comments

Following is a summary of public comments specific to this WSA, concerning adequacy of the analysis in this appendix, and responses to those comments. These comments were received both in writing and as oral testimony at public hearings during the comment periods for the 1985 Draft EIS and 1987 Supplement to the Draft EIS. Comments concerning BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning statewide issues and analyses are addressed in the Statewide volume.

Comment: Acquire Mickey Hot Springs and cabin area with wet meadows.

Response: See discussion in Section 2, Description of the Alternatives, regarding alternatives considered but not analyzed. Also see Map 2, Landownership, to note private lands are mainly in adjacent WSAs. Acquisition under an enhanced alternative is discussed in the Sheepshead Mountain Group appendix of which Table Mountain (2-72I) is a part and contains the majority of the two private parcels in question. The portion of the private land near Mickey Hot Springs which is within the boundaries of East Alvord WSA (2-73A) is discussed under the enhanced alternative for that WSA.

Comment: A plant inventory is needed. Rare plants such as barrel cactus are present.

Response: Available data from Oregon Natural Heritage Data Base and BLM sources were used to write the Special Features sections for the WSA appendices, as the time and funding for completing a new inventory were not available. The barrel cactus, *Pediocactus simpsonii* var. *robustior* is present in the area, and is on the ONHDB and District watch list. Watch list species are those which are currently stable but which may become threatened in Oregon in the foreseeable future. These species currently do not need active management attention, but may need some type of continued monitoring.

Comment: Close all roads and combine with East Alvord (2-73A).

Response: It is not feasible to close the boundary roads for the reasons described in Section 2, Description of the Alternatives, under the discussion of alternatives considered but not analyzed.

Table 1. Summary of Projected Management Actions Under Each Alternative, Winter Range WSA (OR-2-73H)

Projected Management	All Wilderness	No Wilderness/ No Action
Acres Designated as Wilderness	15,440	0
Acres Closed to ORVs by Wilderness Designation	15,440	0
Miles of Ways Closed	3	0
Miles of Roads Construction	0	2.5
Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation	14,800	0
Geothermal Power Plants Developed	0	1
Miles of Powerlines Constructed	0	2.5

Table 2. Summary of Environmental Consequences of Alternatives, Winter Range WSA (OR-2-73H)

Resource or Activity	All Wilderness	No Wilderness/No Action (Proposed Action)
Wilderness Values	Wilderness designation of the entire 15,440 acres would result in protection and enhancement of existing wilderness values.	Projected activities and continued uses would directly and indirectly impair wilderness values over approximately 6,000 acres of WSA with further declines from other potential uses over the long term.
Energy and Mineral Development	Wilderness designation would preclude the development of one 10-megawatt geothermal power plant.	No impact to projected energy development is expected. There would be no impact on mineral development.
Vegetation	Three miles of ways totaling 3 surface acres would eventually revegetate naturally. Little or no change would occur to vegetation in the rest of the area.	Projected geothermal developments would remove ground cover on 71 acres. There would be no change to vegetation in the remainder of the WSA.
Wildlife	Wildlife habitat would be maintained throughout the area.	Minimal impact on wildlife values would be expected. Bighorn sheep, if present, could be adversely impacted by geothermal development.
Livestock Grazing	Livestock use would continue at 604 AUMs. Some inconvenience and increase in costs to livestock operators would result from closure of 3 miles of ways.	Livestock use would remain at its present level of 604 AUMs and vehicle use would continue on all ways for livestock management.
Recreation	There would be a negligible reduction in the area's overall recreation use but remain at less than 100 visitor days per year. This reduction would primarily involve displacement of hunting use to other areas.	Overall recreation use would not change. A negligible increase in vehicle-oriented recreation use combined with the influence of projected geothermal development would decrease primitive recreation use levels.
Local Personal Income	Annual local personal income would remain at approximately $8,500.	Annual local personal income would remain at approximately $8,500.

Table 3. Classification of Energy and Mineral Potential, Winter Range WSA (OR-2-73H)

Commodity	Area	Level of Potential	Level of Certainty
Metals (mercury, copper gold)	Entire WSA	L	B
Geothermal	See Map 3	H	D
	Rest of WSA	M	B
Uranium/Thorium	Entire WSA	O	A
Coal	Entire WSA	L	C
Oil/Gas	Entire WSA	M	B
Tar Sands/Oil Shale	Entire WSA	O	C
Limestone	Entire WSA	O	B
Bentonite	Entire WSA	L	A
Diatomite	Part of area (not shown on map)	L	A
	Rest of WSA	O	B
Zeolites	Entire WSA	L	A
Sodium	Entire WSA	L	A

Legend:

Level of Potential

O - No indication for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Moderate potential for accumulations of energy/mineral resource
H - High potential for accumulations of energy/mineral resource

Level of Certainty

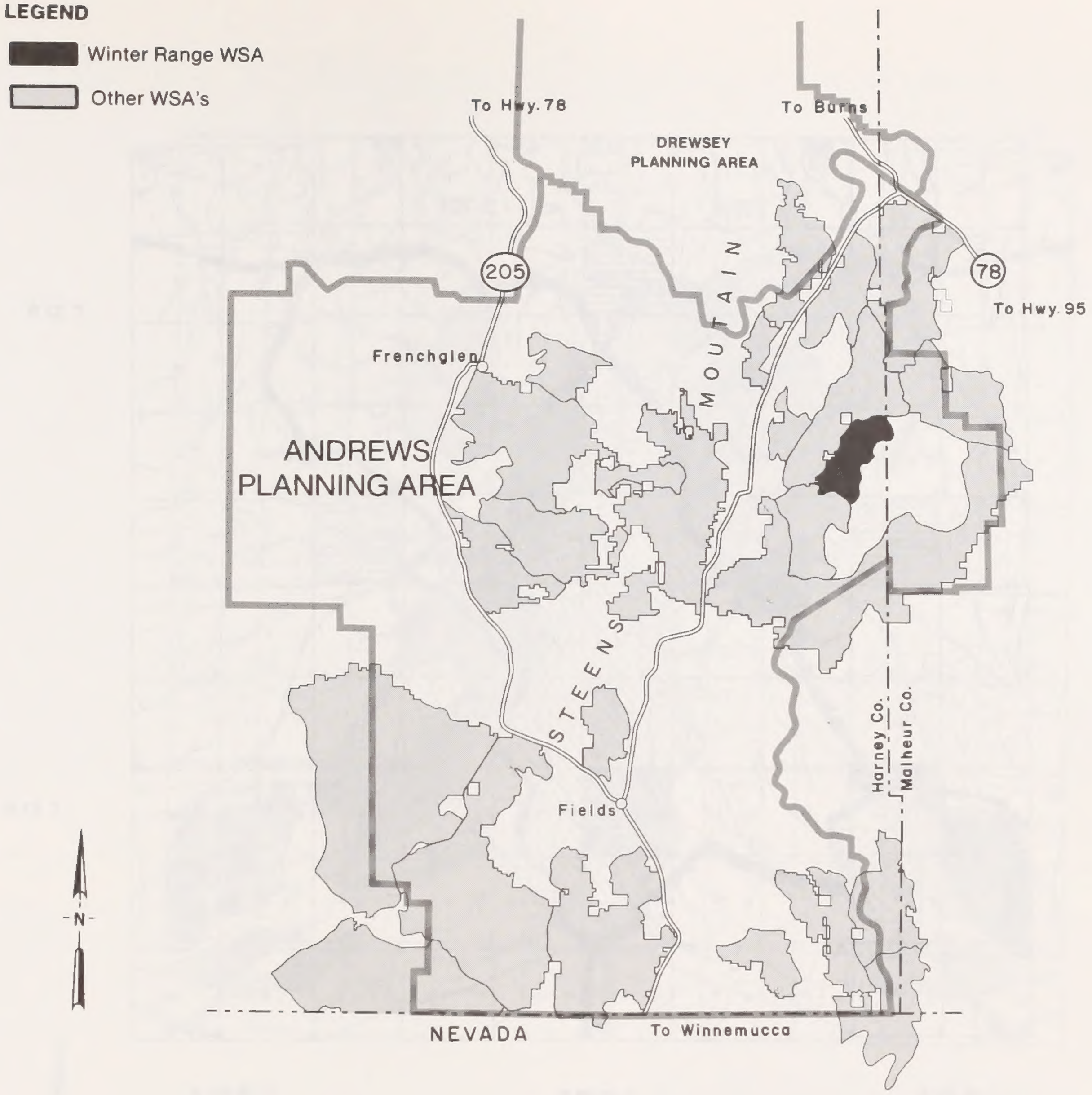
A - Insufficient data or no direct evidence
B - Indirect evidence available

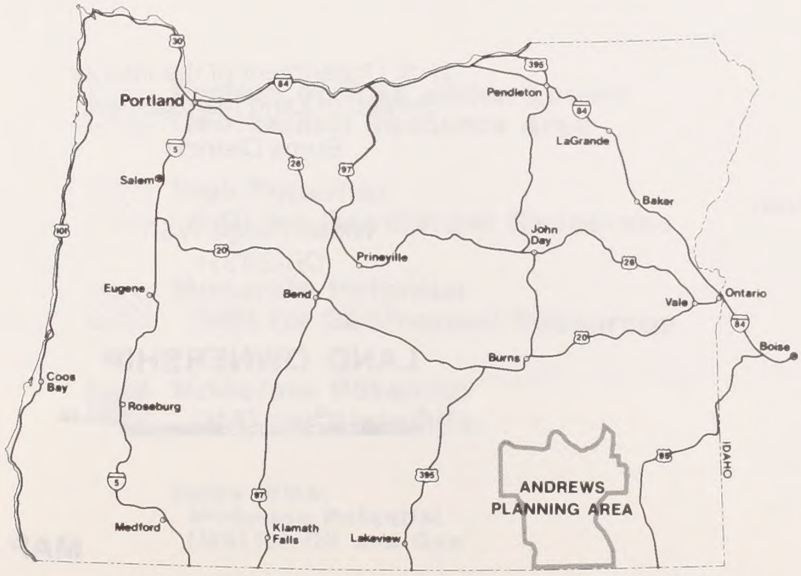
Table 4. Existing Livestock Use, Winter Range WSA (OR-2-73H)

Grazing Allotment	Licensed AUMs in Allotment	Period of Use	Percent of Allotment in WSA	Current Estimated Used in WSA (AUMs)
Alvord (No. 6012)	9,072	12/01-04/15	6	604

Table 5. Effects of Alternatives on Local Personal Income, Winter Range WSA (OR-2-73H) (1981 price levels)

Item	Unit of Measure	All Wilderness	No Wilderness/ No Action
CHANGES IN RESOURCE OUTPUTS			
Livestock Grazing	AUMs	No Change	No Change
Energy & Mineral Development:			
10-MW Geothermal Powerplants	Number	0	1
Recreation Use	RVD	No Change	No Change
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES			
Livestock Grazing	$	0	0
Energy & Mineral Development:			
10-MW Geothermal Powerplants	$	0	Unknown
Recreation Use	$	0	0
Total	$	0	0





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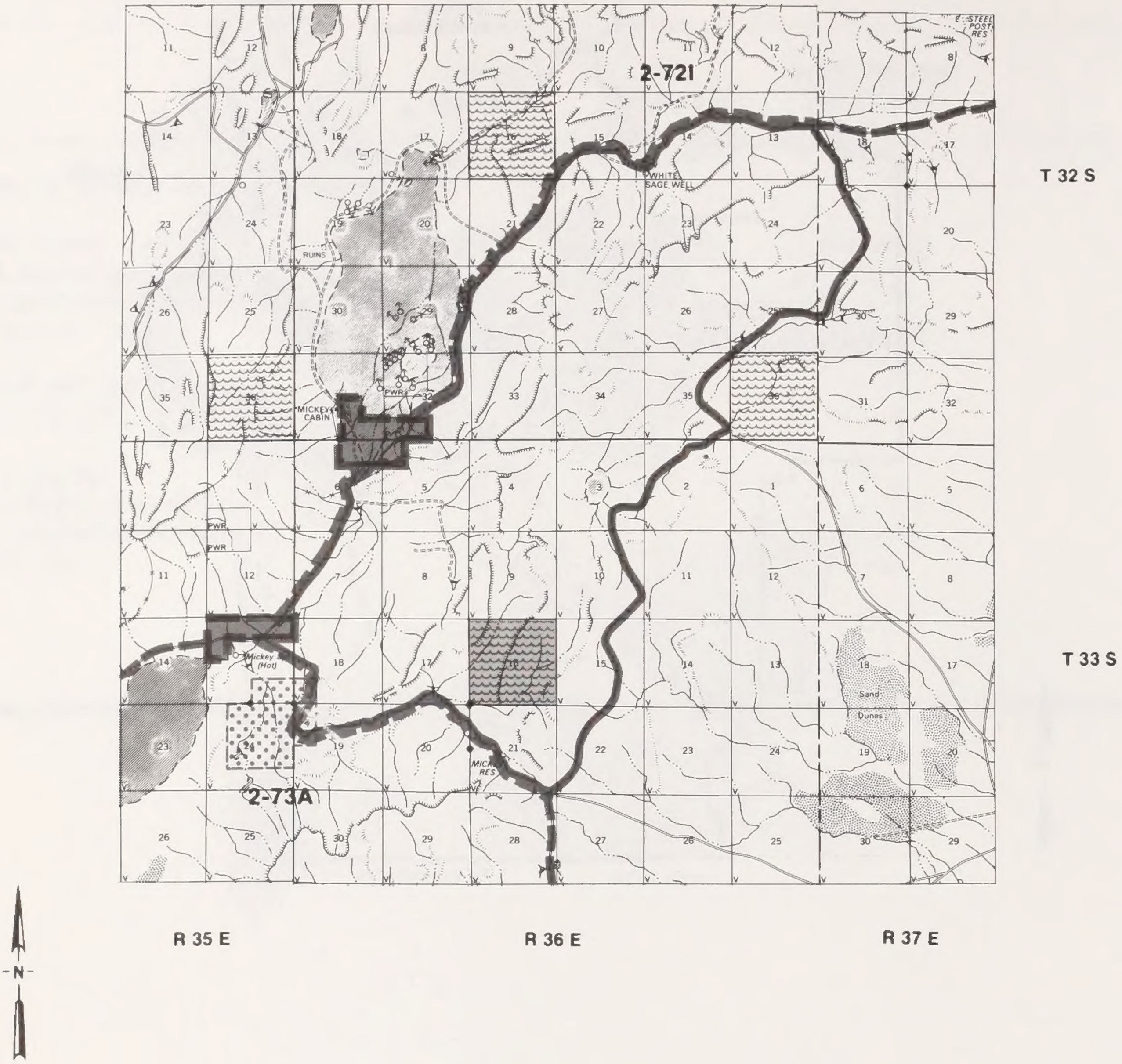
Burns District

Winter Range WSA
OR-2-73-H

LOCATION MAP

10 0 10 MILES

MAP 1



LEGEND

▨ BLM Land Studied Under Section 202 of FLPMA (Other BLM Land in WSA Studied Under Section 603 of FLPMA)

▬ Wilderness Study Area Boundary

▬ ▬ Boundary of Adjacent Wilderness Study Areas

☐ Bureau of Land Management

■ Private

▤ BLM Surface-State or Private Subsurface (Split Estate)

⁙ Mickey Basin Research Natural Area

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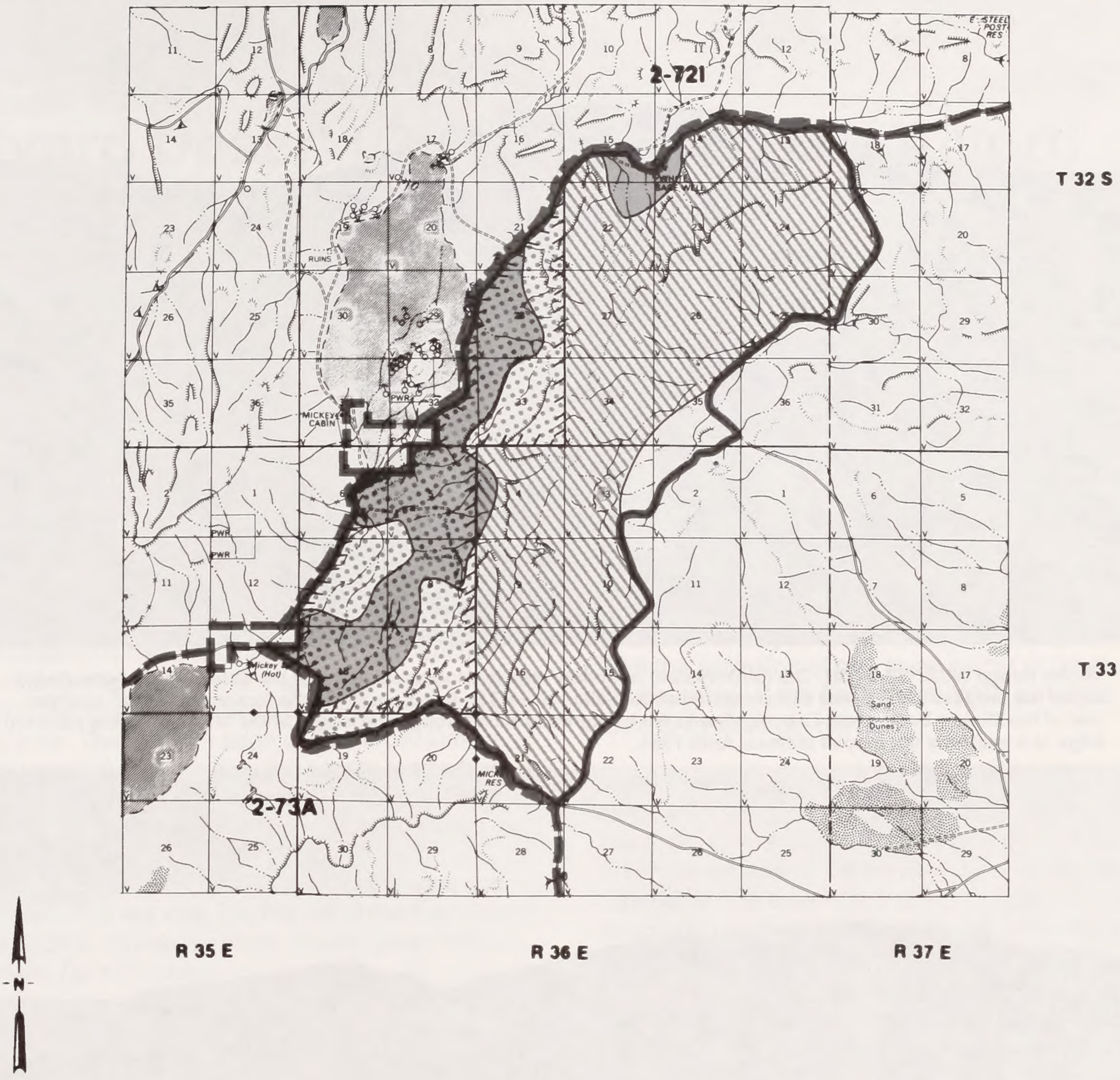
Burns District

Winter Range WSA
OR-2-73H

LAND OWNERSHIP

1 0 1 2 MILES

MAP 2



▨ **Portion of WSA within known Geothermal Resource Area**

░ **High Potential (HD) for Geothermal Resources**

▧ **Moderate Potential (MB) for Geothermal Resources**

▩ **Moderate Potential (MA) for Diatomite**

Entire WSA:
Moderate Potential
(MB) for Oil and Gas

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Winter Range WSA
OR-2-73H

MODERATE OR HIGH POTENTIAL MINERAL OR ENERGY RESOURCES

1 0 1 2 MILES

MAP 3

Winter Range WSA, OR-2-73H. The northwestern boundary area looking southeast into the study area is nonsuitable under the proposed action (no wilderness/no action) alternative. The lower county in the foreground is the southern end of the Mickey Basin area. The ridgeline in the background runs through the length of the WSA and is the northern edge of a relatively flat topped plateau. April 1984.

Winter Range WSA, OR-2-73H. From the southwestern corner of the area looking to the east. Within the area recommended nonsuitable under the proposed action (no wilderness/no action) alternative. Considerable topographic relief is characteristic of the ridgeline which runs through the central portion of the WSA. April 1984.

Appendix to the Wilderness Environmental Impact Statement for Oregon

Alvord Desert (OR-2-74) and East Alvord (OR-2-73A) Wilderness Study Areas

1. Introduction

General Description of the Study Area

The Alvord Desert and East Alvord Wilderness Study Areas (WSAs) are located approximately 70 miles southeast of Burns in Harney and Malheur Counties (see Map 1). The eastern side of the Alvord Desert WSA is about 5 miles southwest of Burns Junction. The nearest highway is U.S. Highway 95, which forms much of the eastern boundary of the Alvord Desert study area. The western edge of the Alvord Desert WSA is partially bounded by the county road which runs from Oregon State Highway 78, at Folly Farm (over 40 miles to the north), to Fields and Denio.

About two-thirds of the study area (on the east and south) is within the Vale District. All of the East Alvord WSA and the remainder of the Alvord Desert WSA are in the Burns District.

The Alvord Desert WSA contains 251,060 acres of public land (see Map 2). The irregularly shaped area is 37 miles long from east to west, and 20 miles wide, north to south, at the extremes, narrowing to 3 miles or less in three locations. Within the study area, and included in the above acreage, are 70 parcels of split-estate lands totaling 29,213 acres. In addition, the WSA contains 34 parcels of private land that total 5,370 acres.

The East Alvord WSA contains 22,240 acres of public land. The area is roughly "T" shaped, being widest in the north, narrowing in the center, and widening slightly again in the south. The area is 8.5 miles from north to south and 6.5 miles from east to west. One parcel of split-estate land (640 acres) is included in the study area.

Roads and private land make up the boundaries of the two study areas. The northern boundary of the Alvord Desert WSA is formed entirely by BLM dirt roads, including the section of road which it shares with the East Alvord WSA. On the east, the boundary includes private land along legal subdivisions, U.S. Highway 95 and a small amount of land at the Rome airport. The southern boundary is a combination of private land, BLM dirt roads and the graveled county road from the Pueblo Valley to U.S. Highway 95 (the Whitehorse Road). The western boundary is formed along legal subdivisions with private land, a 1-mile section of county road, a BLM road and a powerline. With the exception of one small parcel of private land, the boundary of the East Alvord WSA is formed entirely by BLM dirt roads.

Also forming part of the boundary of the Alvord Desert study area are seven dead-end roads, totaling 15.5 miles, which enter the WSA. Four of these dirt roads enter the WSA from the northern boundary while three enter the area from the south. There are no dead-end roads which penetrate the perimeter of the East Alvord WSA.

The two WSAs are within an area of closed drainage basins and desert plateaus. The Alvord Desert WSA consists of a prominent basin and a desert plateau lying east of the 9,700-foot ridge of Steens Mountain. The dominant feature of the study area is the Alvord Desert. The desert is a large (more than 35-square-miles within the WSA), clay-bottomed playa which catches seasonal runoff from the east side of the Steens, but is generally dry for nearly two-thirds of the year. The playa was flooded year-round from 1982 through 1985 due to unusually high snowpack in the Steens Mountain and subsequent runoff; since then it has only been seasonally flooded.

Also within the basin on the east side of the playa is a substantial area of sand dunes containing both shifting and stabilized dunes. The basin, including the playa and dunes, covers the western quarter of the WSA and, at 4,000 feet elevation, is the lowest point within the study area.

Directly east of the Alvord Basin is a large, steep, west-facing escarpment which rises to a plateau and forms part of the basin's boundary. The plateau is the highest point within the study area, reaching an elevation of 4,974 feet. East of this escarpment, the plateau slopes gently toward the east for a distance of about 11 miles. This area of relatively gentle topography is broken only by a long, rocky rim which forms the southern edge of the plateau. Farther to the east, Coyote Lake is the major feature of the landscape. It is a playa that is somewhat smaller than the Alvord playa and, like the Alvord, is usually dry. East of Coyote Lake is the Barren Valley portion of the WSA. The topography here is flat to gently rolling with only a few rounded ridgelines and shallow drainages to provide diversity to the landscape.

The East Alvord WSA includes the eastern edge of the Alvord Basin, the escarpment, and plateau features also present in the Alvord Desert WSA. In this study area the escarpment runs roughly through the center of the WSA, dividing the plateau area on the east from the Alvord Basin on the west. Sand dunes are the primary feature of the Alvord Basin portion of the study area.

Most of these dunes are stabilized with a variety of vegetation. The lowest elevation in the study area (4,015 feet) occurs along the western side of the WSA.

In the northern portion of the WSA lies a much smaller basin. Most of this area is covered by a playa. In addition, Mickey Hot Springs is located on the northern edge of the study area. The springs contain several pools of extremely hot water and, on occasion, bubbling mud holes and steam vents.

As in the Alvord Desert WSA, the escarpment in the East Alvord WSA rises abruptly (from 400 to 1,100 feet above the basin floor) on the eastern edge of the basin to form the plateau area. The study area reaches its maximum elevation in the north-central portion of the WSA where the plateau reaches 5,384 feet. The plateau region in the northern part of the area is somewhat flat to gently rolling and generally slopes to the south and west.

In the southern portion of the study area, the plateau region is cut by numerous intermittent stream drainages, creating an extremely diverse landscape of rounded, rolling hills.

The two study areas contain a variety of plant species. The most common species found in the WSAs is big sagebrush. This shrub is found throughout most of the area east of the Alvord Desert playa. There are several places, however, where big sagebrush is not the dominant species. The sand dunes, for example, are dominated by greasewood, and this portion of the WSA has a diversity of vegetation including spiny hopsage, green rabbitbrush, shadscale, budsage, bottlebrush squirreltail, four-wing saltbush and cheatgrass. The Alvord Desert playa, Coyote Lake and the playa south of Mickey Hot Springs are completely devoid of vegetation.

Interrelationships

Five other wilderness study areas share common boundaries with the Alvord Desert and East Alvord WSAs.

On the west, the Alvord Desert study area is separated from the High Steens WSA (OR-2-85F) by less than a 1-mile segment of county road. This well-used and maintained road is a major access route within the county serving a wide variety of users. The most significant interrelationship between the Alvord Desert and High Steens study areas is the visual or scenic relationship. One of the attractions of the Steens Mountain summit is the view of the Alvord Desert playa over 5,000 feet below. Conversely, the dominant view from most of the Alvord Desert and East Alvord WSAs is that of the steep, east-facing escarpment of Steens Mountain.

On the northeast, the Alvord Desert study area is adjacent to the Wildcat Canyon WSA (OR-2-72D). The two areas are separated by a low standard dirt road which is used and maintained by BLM and range users. On occasion, private landowners and recreationists also make use of this road.

The Bowden Hills WSA (OR-3-118) is adjacent to the Alvord Desert study area on the southeast. U.S. Highway 95 separates the two WSAs.

Two study areas adjacent to the East Alvord WSA are Table Mountain WSA (OR-2-72I) on the north and Winter Range WSA (OR-2-73H) on the northeast. The low standard dirt roads separating these areas are also used and maintained by BLM and range users, with additional use by recreationists and landowners.

The Alvord Desert Area of Critical Environmental Concern (ACEC) is a 16,700-acre area on the northeastern corner of the Alvord Basin, totally encompassed by the two WSAs (see Map 3). Part of the ACEC is in the western portion of the Alvord Desert WSA and the remainder is in the southwestern corner of the East Alvord study area. The area includes a sequence of vegetation belts and is rich in biological diversity of both plant and animal communities of the northern Great Basin Desert. The area was designated in 1983 to protect the scientific and educational values associated with the area's vegetation and wildlife.

Some 510 acres of the 560-acre Mickey Basin Research Natural Area (RNA) are located in the northeastern corner of the East Alvord WSA with the remainder in the Winter Range WSA (see Map 3). The RNA contains a stand of winterfat in good condition. The winterfat area has been set aside under this special designation in order to protect it for research and educational purposes.

The Andrews Management Framework Plan (MFP) provides for management of the ACEC for protection of its vegetative and wildlife values.

The ACEC is managed to protect its scientific and educational values. The area is designated as an off-highway vehicle exclusion area, limiting motorized vehicle use to designated roads and ways, to prevent damage to the fragile habitat. Livestock will remain under a winter grazing system, which has allowed the vegetation to remain in good condition. Mineral and energy-related activities will be controlled to minimize surface disturbance. A 3,840-acre area in the northern portion of this ACEC will be managed more stringently to preserve its natural condition with a minimum of human disturbance.

Management objectives for the Mickey Basin RNA are to preserve the terrestrial ecosystem for educational and scientific purposes. Management of the RNA includes minimizing surface-disturbing activities detrimental to plant communities and species. Fencing portions of the RNA is also being considered.

The special management restrictions of the Alvord Desert ACEC and the Mickey Basin RNA would continue to apply whether or not the area is designated wilderness. Although neither area would be withdrawn from mineral leasing, reasonable effort would be made to minimize the impacts of energy and mineral exploration and development.

The WSAs are located within ODFW's Whitehorse Wildlife Management Unit which contains 4,882-square-miles of land. The WSAs support a summer population of an estimated 20 deer and 35 antelope and a winter population of 50 deer and 110 antelope. ODFW has not set management objectives for antelope, but has an objective of 5,500 deer for the Whitehorse Wildlife Management Unit. ODFW conducts an annual aerial census of antelope wintering east of Coyote Lake in the Alvord Desert WSA.

ODFW's goal for nongame wildlife is to maintain populations of naturally-occurring species at self-sustaining levels.

The proposed action for this WSA conforms with ODFW's management goals for game species, but would not conform for nongame species due to impacts on kit fox and other nongame species.

Part of Alvord Desert WSA and all of East Alvord WSA are in the Alvord-Tule Springs wild horse herd management area (HMA), and the remainder of Alvord Desert WSA is in the Coyote Lake HMA. Management of the HMA, including the use of the trap site in the Alvord Desert WSA when excess numbers of wild horses are periodically gathered, would not be significantly affected by any of the alternatives.

Harney County and Malheur County have not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study and EIS planning, scoping and public review process. These issues concern both the effects of wilderness designation on existing and potential land uses or resources in the WSA, as well as the effects of existing and potential land uses or resources on wilderness values. Land uses or resources raised as issues specifically for this WSA include:

- impact on wilderness values,
- impact on potential for developing geothermal, oil and gas, as well as other mineral resources within the area,
- impact on deer, antelope, snowy plover, kit fox and other nongame wildlife populations,
- impact on livestock grazing use levels and management,
- impact on possible designation of an east-west utility corridor through the eastern portion of the WSA,
- impact on management of existing Research Natural Area and Area of Critical Environmental Concern,
- impact on recreation use levels, particularly the existing use of Alvord Desert by motorized vehicles and other motorized equipment,
- impact on the management of wild horses in the area (see Statewide EIS issues discussion), and
- impact on economic values of existing and projected resource outputs and local personal income derived from them.

No other issues specific to these WSAs were raised by the BLM or the public.

2. Description of the Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made.

The following alternatives are analyzed:

- all wilderness
- enhanced wilderness
- proposed action
- no wilderness/no action

The possibility of combining the Alvord Desert and East Alvord WSAs by closing the road between them is analyzed under the enhanced wilderness and preferred alternative and proposed action.

The enhanced alternative does not analyze the possible combination of the Alvord Desert and East Alvord wilderness study areas with any of the adjacent WSAs. Combining the Alvord Desert with the High Steens, Stonehouse and Lower Stonehouse WSAs on the west by closing the segment of road between them would not be feasible. The portion of boundary road shared by these study areas is less than 1 mile in length and is part of a major county road. The road provides access to the southern end of Harney County along the east side of Steens Mountain and is well-maintained and well-traveled.

The same situation is true on the southeastern corner of the Alvord Desert WSA. It would not be practical to consider closing a portion of a U.S. highway in order to combine two WSAs.

The possible combination of the Alvord Desert WSA with the Wildcat Canyon WSA on the northeast or the East Alvord WSA with the Table Mountain or Winter Range WSAs on the north also are not analyzed. The Wildcat Canyon and Table Mountain study areas are separated from Alvord Desert and East Alvord study areas by the Mickey Hot Springs Road. This road is an important route which provides access to the southern end of the Sheepshead Mountains area, as well as the eastern portions of the Alvord Desert region. The road is used primarily by grazing operators for checking livestock and range developments, but is also used by BLM personnel, recreationists and private landowners.

Another road separates East Alvord WSA from the Winter Range WSA. Although this road does not receive a significant amount of use at this time, a road closure proposed in the enhanced alternative would shift some use by the rancher to this boundary road, thereby increasing the need to leave this road open for access. In addition, closing any of these roads and combining the study areas would not significantly enhance the manageability or wilderness qualities of these WSAs.

All Wilderness

The all wilderness alternative would recommend all 251,060 acres of public land in the Alvord Desert WSA and all 22,240 acres of public land in the East Alvord WSA suitable as wilderness (see Map 2). The road between the WSAs would remain open, and the two areas would be managed as two separate wilderness areas.

For purposes of analysis, it is assumed none of the private inholdings or the mineral estate portion of the split-estate lands within either WSA would be acquired. The dead-end roads which enter the Alvord Desert study area would remain open.

Energy and Mineral Development Actions

Wilderness designation would close 221,847 acres of public land within the Alvord Desert WSA to all forms of appropriation under the mining and mineral leasing laws. Mineral development is not expected, but 5,370 acres of private lands in 34 parcels as well as 29,213 acres of split-estate lands in 70 parcels throughout the WSA would be open to mineral exploration and development.

Wilderness designation would close 21,600 acres of public land within the East Alvord WSA to all forms of appropriation under the mining and mineral leasing laws. The East Alvord Desert contains one parcel of split-estate lands.

The Alvord Desert WSA includes 39,490 acres with high potential for the occurrence of geothermal resources and 181,997 acres which have a moderate potential for the occurrence of geothermal resources. The East Alvord WSA includes 9,270 acres with high potential for the occurrence of geothermal resources and 12,330 acres which have a moderate potential for the occurrence of geothermal resources. Both WSAs contain abundant direct and indirect evidence for this geothermal resource. The western portions of both WSAs (approximately one-fourth of both WSAs) lie within the Alvord Known Geothermal Resource Area (KGRA).

Alvord Desert WSA contains portions of two geothermal leases on the western edge of the Alvord Desert playa while East Alvord WSA has none. Although the areas have high geothermal potential, interest in the geothermal resources of the area has noticeably subsided in recent years. Therefore, no exploration is expected to take place before April 1990, the expiration date of the leases. The private and split-estate lands also lack the benefit of sufficient Federal lands for industry to expand under this alternative. If the surrounding Federal lands are designated wilderness, no significant exploration or development can be projected for the private or split-estate lands. Therefore, no exploration or development is predicted for energy resources under this alternative.

Areas that contain a moderate potential for the occurrence of uranium, diatomite, copper, silver, zinc and beryllium, based on indirect evidence, are scattered throughout the Alvord Desert WSA. The southern portion of East Alvord WSA contains a moderate potential for diatomite. Both WSAs have a moderate potential for the occurrence of oil and gas (see Map 6). However, neither WSA contains a known deposit of locatable minerals. No mining claims or oil and gas leases exist in either WSA and it is assumed no new mining claims will be staked before wilderness designation. Due to a lack of known developable resources in the WSAs, mineral exploration and development is not projected on the private and split-estate lands.

Both WSAs contain areas of high potential for sand and gravel. There are seven material sites for the Oregon Department of Transportation and Malheur County which have grandfathered rights. However, demand is insignificant at these sites and no significant expansion is expected. One community material pit, which lies partly within the Alvord Desert WSA, would be closed and reclaimed within the boundary of the WSA.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

Horse Trap Access Actions

The 3 miles of way to the Coyote horse trap would be closed, precluding the use of the facility to gather excess wild horses.

Livestock Management Actions

Based on preliminary studies, a reduction in livestock grazing use of 30 AUMs is projected, depending upon the results of monitoring. This reduction is necessary to correct unfavorable forage conditions in the Andrews allotment portion of the Alvord Desert WSA. This would result in livestock grazing use of 4,488 AUMs and an additional 450 AUMs of temporary nonrenewable use. This temporary use could become permanent depending upon the results of monitoring.

A portion of the Alvord allotment in the East Alvord WSA would remain at the current estimated use level of 618 AUMs and an additional 190 AUMs of temporary nonrenewable use. This use could also become permanent depending upon the results of monitoring.

The 68 miles of ways would be closed to motorized use. Day-to-day management of livestock by this means would, therefore, be precluded.

Maintenance of 20 miles of existing fence could be done on foot or by horseback and pack animals, but maintenance of 14 reservoirs would require access on various ways for heavy equipment approximately once every 10 years. The six wells, located alongside boundary roads or at the end of open interior roads would require vehicle access on the average of 50 to 100 feet of way for maintenance every two years.

Utility Corridor Routing and Development Actions

The proposed utility corridor would be routed south of the Alvord Desert WSA.

Recreation Management Actions

The entire 273,300 acres of the Alvord Desert and East Alvord WSAs would be closed to motorized vehicle use, including 65 miles of ways in the Alvord Desert and 3 miles of ways in East Alvord WSA. There is a current off-highway vehicle designation limiting motorized vehicle use to designated access routes in the 16,700-acre Alvord Desert ACEC and the 560-acre Mickey Basin RNA (510 acres are within the boundary of the East Alvord WSA).

Recreation use is estimated to be less than 200 visitor days per year. Most use is associated with vehicle access utilizing existing roads and ways and cross-country travel on the Alvord Desert playa, when it is used as a play area by off-highway vehicle, land yacht and glider enthusiasts.

Enhanced Wilderness

Under the enhanced wilderness alternative, part of the Alvord Desert WSA (218,090 acres) and all of the East Alvord WSA (22,240 acres) would be combined and a total of 240,330 acres of public land would be recommended suitable for wilderness designation (see Map 4). This alternative would also recommend closure of the 12-mile section of road which separates the two study areas. The seven dead-end roads which penetrate the Alvord Desert WSA would also be closed.

An attempt would be made to acquire the mineral estate portion of 21,398 acres of split-estate land within the two study areas. In addition, a small parcel of private land, about 50 acres in the northern portion of the East Alvord WSA near Mickey Hot Springs, and 4,735 acres of private inholdings in the Alvord Desert WSA would also be recommended for acquisition. The mineral estate and private land would be acquired through purchase or exchange with willing owners.

Assuming acquisition of private lands, the total area recommended suitable under this alternative would be 245,115 acres. This alternative would recommend 32,970 acres nonsuitable for wilderness, all of it within the Alvord Desert WSA.

Under the enhanced wilderness alternative, the northern, eastern and southern boundary line of the Alvord Desert WSA would be virtually the same as the boundary of the area recommended suitable. The primary boundary adjustments would occur as a result of the acquisition of private inholdings and boundary parcels and the closure of 15.5 miles of dead-end roads and 12 miles of road between this study area and the East Alvord WSA.

On the western side of the Alvord Desert WSA, 32,970 acres of the Alvord playa and land to the south of the playa would not be recommended as suitable for wilderness. The suitable boundary on this side of the study area would follow legal subdivisions and the eastern edge of the playa where very small, slightly vegetated mounds, known as greasewood hummocks, begin to appear on the landscape. The hummock area roughly marks the edge of the playa and is also the western boundary of the ACEC.

Except for acquisition of the small parcel of private land along the northern boundary and closure of the road on the southern and western boundary lines to merge the two study areas, there would be no changes in the boundary recommended for the East Alvord WSA under this alternative.

Energy and Mineral Development Actions

The enhanced alternative would close 218,932 acres of public land within the WSAs to all forms of appropriation under the mining and mineral leasing laws. If acquisition is successful, an additional 4,785 acres of private land and 21,398 acres of split-estate lands would also be closed to mineral exploration and development.

The enhanced wilderness alternative, which combines part of Alvord Desert WSA and all of the East Alvord WSA, includes 24,080 acres with high potential for the occurrence of geothermal resources and 194,852 acres with moderate potential for the occurrence of geothermal resources. Both WSAs have a moderate potential for oil and gas throughout the entire area (see Map 6).

The suitable area contains abundant direct and indirect evidence for geothermal resources and the far western portion of the area lies within the Alvord KGRA. Due to acquisitions, exploration and development of energy resources would be precluded on 245,115 acres.

In the nonsuitable portion of the Alvord Desert WSA, no exploration or development is predicted for energy resources. Due to a lack of geologic evidence, no known petroleum bearing formations, a subsurface not conducive to the formation of hydrocarbons and the absence of any existing oil and gas leases, only casual exploration for oil and gas is projected. The nonsuitable area does have a high potential for the occurrence of geothermal resources, but interest in the geothermal resources of the area has noticeably subsided in recent years and contains no geothermal leases.

Areas that contain a moderate potential for the occurrence of uranium, diatomite, copper, silver, zinc and beryllium, based on indirect evidence, are scattered throughout the Alvord Desert WSA. The East Alvord WSA contains an area in the southern portion of the WSA that has a moderate potential for the occurrence of diatomite, based on indirect evidence. There are no known developable deposits of these commodities and no mining claims within the suitable portion of the WSA. Therefore, exploration and development of locatable minerals would be precluded on 245,115 acres recommended suitable under this alternative.

The entire suitable area has a high potential for sand and gravel. There are seven material sites with grandfathered rights. Demand for these sites is expected to remain low.

Exploration and development for mineral resources could occur on the 32,970 acres recommended nonsuitable. However, there are no known developable deposits of mineral commodities and no mining claims within the nonsuitable area. It is postulated that only casual exploration for mineral resources would occur in the nonsuitable area under this alternative.

No development for sand and gravel is expected in the nonsuitable area. The pits already developed in the suitable area along U.S. Highway 95 are sufficient to handle the projected needs of the Oregon State Highway Division. The community pit located in the nonsuitable area under the enhanced alternative would remain open. No significant expansion is expected for this pit.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and, in the suitable area, consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

Horse Trap Access Actions

The 3 miles of way to the Coyote Lake horse trap would be closed, precluding the use of the facility to gather excess wild horses.

Livestock Management Actions

Livestock grazing use in the Alvord Desert WSA and within portions of four allotments would increase from 4,518 AUMs to 5,198 AUMs which includes an increase of 230 AUMs from projected range improvements in the nonsuitable portion of the WSA. Included in the increase would be 450 AUMs of temporary nonrenewable use which could become permanent depending upon the result of monitoring. The 6,533 AUMs of available but unallocated forage in the suitable portion would not be allocated to livestock.

A portion of the Alvord allotment in the East Alvord WSA would remain at the current estimated level of 618 AUMs and an additional 190 AUMs of temporary nonrenewable use. This use could also become permanent depending on the results of monitoring.

The 68 miles of ways and 27.5 miles of roads would be closed to motorized use. Monitoring livestock by this means would, therefore, be precluded.

Maintenance of 20 miles of existing fence could be done on foot or by horseback and pack animals, but maintenance of 14 reservoirs would require access for mechanized, heavy equipment on various roads and ways approximately once every 10 years. The five wells, located alongside closed interior roads and the one located alongside a boundary road, would require vehicle access for maintenance every two years.

Under this alternative, 780 acres in the Andrews allotment portion of the Alvord WSA would be treated to control sagebrush and reseeded to crested wheatgrass. This project would be located in the area designated nonsuitable for wilderness to offset a shortage of available forage.

Utility Corridor Routing and Development Actions

The proposed utility corridor would be rerouted south of the Alvord Desert WSA.

Recreation Management Actions

Assuming acquisition of private inholdings, motorized recreation use would be precluded on 245,115 acres including 68 miles of ways (65 in the Alvord Desert WSA and 3 miles in East Alvord WSA), 12 miles of boundary road separating the two WSAs and seven dead-end roads (15.5 miles) in the Alvord Desert WSA. There is a current off-highway vehicle designation limiting motorized vehicle use to existing, designated access routes in the 16,700-acre Alvord Desert ACEC and the 560-acre Mickey Basin RNA. Off-highway vehicle use would continue on 32,970 acres in the nonsuitable area including the Alvord Desert playa.

Recreation use is estimated to be less than 200 visitor days per year. Most use is associated with vehicle access utilizing existing roads and ways, and cross-country travel on the Alvord Desert Playa, when it is used as a play area by off-highway vehicle, land yacht and glider enthusiasts.

Proposed Action

Under the proposed action, a total of 69,165 acres of public land would be recommended suitable for wilderness in the Alvord Desert WSA. None of the East Alvord WSA would be recommended suitable for wilderness (see Map 5). Under this alternative, 204,135 acres would be recommended nonsuitable for wilderness: 181,895 acres in the Alvord Desert study area and all 22,240 acres in the East Alvord area.

The proposed action recommends leaving the road open that separates the two study areas. An attempt would be made to acquire the mineral estate on nine parcels of split-estate land totaling 4,475 acres. The mineral estate would be acquired through purchase or exchange with willing owners. Two roads, one to Alvord Well No. 4 and another short dead-end road, would be closed. The horse trap way would remain open under this alternative.

The western side of the Alvord Desert WSA (the playa) would not be recommended as suitable for wilderness. The boundary for this alternative would also be on the eastern side of the Alvord playa where the vegetation begins in the greasewood hummocks. The playa and some of the vegetated land south of the playa would not be recommended suitable; it would not be manageable, because of conflicts with existing recreation use and potential geothermal resource values.

The boundary in the northwestern portion of the Alvord Desert study area would follow legal subdivisions. This portion of the study area would be recommended as nonsuitable for wilderness because of geothermal resource values.

The north-central boundary would follow the roads around the western and southern boundary of East Alvord WSA, thus eliminating the entire WSA. In the northeastern portion of the Alvord Desert area the boundary would follow the road leading from Ancient Lake Well to Coyote Lake. The boundary would then skirt the eastern edge of Coyote Lake and join the small section of road which exits from the southeastern corner of the lake playa.

The Barren Valley area to the east of Coyote Lake would not be recommended for wilderness because of the limited wilderness values in this portion of the area. Although there are opportunities for solitude in this corner of the study area, there are no outstanding opportunities for recreation and there are no known special features. In addition, the area contains over 3,700 acres of scattered private land inholdings and nearly 13,600 acres of split-estate land, most of which is located in a checkerboard pattern in the southeastern portion of the WSA.

From Coyote Lake west, the southern boundary of the area would be adjusted slightly to follow legal subdivisions and avoid several private inholdings.

On the southwest, the boundary would be adjusted to conform with the Sand Gap road and vehicle way. The suitable boundary in this part of the study area would follow the road and way instead of legal subdivisions, making it more identifiable. The land recommended as nonsuitable for wilderness is partially within the Alvord KGRA and contains a checkerboard pattern of split-estate lands.

Energy and Mineral Development Actions

The proposed action would close 64,690 acres of public land within the Alvord Desert WSA to all forms of appropriation under the mining and mineral leasing laws. If acquisition is successful, 4,475 acres of split-estate land would also be closed to mineral exploration and development for a total of 69,165 acres.

The proposed action, which eliminates the East Alvord WSA and a portion of the Alvord Desert WSA from wilderness consideration, includes 4,660 acres with high potential for the occurrence of geothermal resources and 53,315 acres with a moderate potential for the occurrence of geothermal resources. The suitable area contains abundant direct and indirect evidence for geothermal resources and the far western portion of the area lies within the Alvord KGRA. The entire area has a moderate potential for the occurrence of oil and gas (see Map 6).

Exploration and development of energy resources is not projected in the suitable area, as interest in the geothermal resources of the area has noticeably subsided in recent years and the suitable area contains no geothermal leases.

If future energy needs generate renewed interest in the area, exploratory temperature gradient wells could be drilled at 30 locations in the nonsuitable area. Exploration would disturb eight acres in the vicinity of Mickey Hot Springs. Temporary cross-country travel to the drill pads would result in an additional one acre of surface disturbance. If this exploration is successful, one 10-megawatt geothermal powerplant would be built. The plant and geothermal collection field would utilize 60 acres. The 2.5-mile transmission line and roads to the plant would disturb 11 acres. A total of 80 acres would be disturbed by geothermal activities.

Areas that contain a moderate potential based on indirect evidence for the occurrence of uranium, diatomite, silver, copper, zinc and beryllium are scattered throughout the suitable portion of the Alvord Desert WSA. No mining claims exist in the suitable area and no new mining claims are expected to be staked before wilderness designation. Therefore, no exploration or development of locatable minerals is expected in the suitable area.

Exploration and development for mineral resources could occur on the 204,135 acres recommended nonsuitable, However, there are no known developable deposits of mineral commodities and no mining claims within the nonsuitable area. It is postulated that only casual exploration for mineral resources would occur in the nonsuitable area.

The entire area has a high potential for sand and gravel. There are seven materials sites in the nonsuitable area, and the demand for material from these sites is expected to remain low.

The community pit in the nonsuitable area would remain open. No significant expansion is expected for this pit.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and, on 69,165 acres recommended suitable for wilderness, consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Two guzzlers, disturbing two acres, would be constructed in the Alvord Desert WSA to provide water for antelope and other wildlife.

Horse Trap Access Actions

The Coyote Lake horse trap would be used on the average of once every four years to facilitate the removal of excess numbers of wild horses. The way would be maintained and improved at the time of each use, if needed, to allow for passage of heavy trucks.

Livestock Management Actions

Livestock grazing use in the Alvord Desert WSA and within portions of four allotments would increase from 4,518 AUMs to 11,731 AUMs. This includes increase 230 AUMs from projected range improvements in the nonsuitable portion of the WSA. Also included in the increase would be 450 AUMs of temporary nonrenewable use that could become permanent depending upon the results of monitoring and 6,533 AUMs of available but unallocated forage in the nonsuitable portion that would be allocated to livestock.

A portion of the Alvord allotment in the East Alvord WSA would remain at the current estimated level of livestock grazing use of 618 AUMs and an additional

190 AUMs of temporary nonrenewable that could also become permanent depending on the results of monitoring.

Under this alternative, 2.5 miles of way and 3 miles of road would be closed to motorized use in the suitable portion. Monitoring of livestock by vehicles in the nonsuitable portion would continue on the roads and ways.

Maintenance of 7 miles of existing fence could be done on foot or by horseback and pack animals, but maintenance of five reservoirs would require access for mechanized heavy equipment on specific access routes approximately once every 10 years. Three wells, located along side boundary roads would require vehicular access on the average of 50 to 100 feet of way for maintenance every 2 years. Another well, located at the end of 2.5 miles of closed road would also require vehicular access.

Under this alternative, 780 acres in the Andrews allotment portion of the Alvord Desert WSA would be treated to control sagebrush and reseeded to crested wheatgrass. A fence 4 miles in length would be constructed to control drifting livestock between two grazing allotments located in both the Burns and Vale Districts. These projects would be located in the area designated nonsuitable for wilderness to offset a shortage of available forage.

Utility Corridor Routing and Development Actions

The proposed utility corridor would be designated as planned and would be available to route a proposed 500-kV powerline 13 miles through the eastern portion of the WSA, including the construction of an access road along the length.

Recreation Management Actions

Motorized vehicle use would be precluded on 69,165 acres recommended suitable under this alternative, including 2.5 miles of ways and 3 miles of dead-end roads. Vehicle-oriented recreation activities could occur on 204,135 acres recommended nonsuitable.

There is a current off-highway vehicle designation limiting motorized vehicle use to designated access routes in the 16,700-acre Alvord Desert ACEC and the 560-acre Mickey Basin RNA (510 acres which are in East Alvord WSA). Approximately 6,385 acres of the Alvord Desert ACEC and the 510 acres of the Mickey Basin RNA would be in the nonsuitable portion and would remain subject to this OHV limitation.

Recreation use is estimated to be less than 200 visitor days per year. Most use is associated with vehicle access utilizing existing roads and ways, and cross-country travel on the Alvord Desert Playa, when it is used as a play area by off-highway vehicle, land yacht and glider enthusiasts.

No Wilderness/No Action

The no wilderness/no action alternative would recommend both WSAs nonsuitable as wilderness. It represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

The entire 273,300 acres of public land in the two WSAs would be open to mineral and energy exploration and development.

The Alvord Desert WSA includes 39,490 acres with high potential for the occurrence of geothermal resources and 181,997 acres which have a moderate potential for the occurrence of geothermal resources. The East Alvord WSA includes 9,270 acres with high potential for the occurrence of geothermal resources and 12,330 acres which have a moderate potential for the occurrence of geothermal resources. Both WSAs contain abundant direct and indirect evidence for this geothermal resource. The western portions of the WSAs (approximately one-fourth of both WSAs) lie within the Alvord KGRA.

The Alvord Desert WSA contains portions of two geothermal leases on the western edge of the Alvord Desert playa and East Alvord WSA has none. Although the WSAs have a high geothermal potential, interest in the geothermal resources has noticeably subsided in recent years. Both WSAs have a moderate potential for the occurrence of oil and gas (see Map 6).

If future energy needs generate renewed interest in the area, exploratory temperature gradient wells could be drilled at 60 locations. Exploration would disturb 16 acres (8 acres in the vicinity of Alvord Hot Springs and 8 acres in the vicinity of Mickey Hot Springs). Temporary cross-country travel to the drill pads would result in an additional two acres of surface disturbance(one acre at each of the two locations). If exploration is successful, one 10-megawatt geothermal powerplant would be built in the vicinity of Mickey Hot Springs within the East Alvord WSA. The plant and geothermal collection field would utilize 60 acres. The 2.5-mile transmission line and roads to the plant would disturb 11 acres. A total of 89 acres would be disturbed by geothermal activities.

Geographically, Mickey Hot Springs is better suited for development than Alvord Hot Springs. Alvord Hot Springs is situated on the edge of a playa that is periodically flooded by run-off water from the east face of Steens Mountain, making it more difficult to construct facilities.

Areas that contain a moderate potential, based on indirect evidence, for the occurrence of uranium, diatomite, copper, silver, zinc and beryllium are scattered throughout the Alvord Desert WSA. In the southern portion of the East Alvord WSA is an area that has a moderate potential based on indirect evidence, for occurrence of diatomite.

Exploration would occur at 25 locations in the north-central and southwestern portions of the Alvord Desert WSA and disturb 10 acres (6 acres for core drilling and trenching and 4 acres involving 4 miles of cross-country travel). Exploration is not expected to prove the existence of any ore body of uranium, silver, copper, zinc, beryllium or diatomite that would prove economically competitive with other known deposits. Therefore, development of locatable minerals is not projected within either WSA.

Both WSAs have high potential for sand and gravel. The Oregon State Highway Division will continue to require material from the seven existing material sites. The demand for sand and gravel is small and would not involve a significant amount of new surface disturbance. One community pit would also remain open. No significant expansion is expected for this pit.

Horse Trap Access Actions

The Coyote Lake horse trap would be used on the average of once very 4 years to facilitate the removal of excess numbers of wild horses. The way would be maintained and improved at the time of each use, if needed, to allow for the passage of heavy trucks.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Two guzzlers, disturbing 2 acres, would be constructed in the Alvord Desert WSA to provide water for antelope and other wildlife.

Livestock Management Actions

Livestock grazing use in the Alvord Desert WSA and within portions of four allotments would increase from 4,518 AUMs to 11,731 AUMs. This includes an increase of 230 AUMs from projected range improvements in the nonsuitable portion of the WSA. Also included in the increase would be 450 AUMs of temporary nonrenewable use that could become permanent depending upon those results of monitoring and 6,533 AUMs of available but unallocated forage in the nonsuitable portion that would be allocated to livestock.

A portion of the Alvord allotment in the East Alvord WSA would remain at the current estimated level of livestock grazing use of 618 AUMs and an additional 190 AUMs of temporary nonrenewable use that could also become permanent depending upon the results of monitoring.

Vehicle use for livestock management and maintenance would continue on 68 miles of ways and 27.5 miles of roads involving approximately 30 trips during the grazing season.

A 780-acre brush control/seeding project would be developed. A fence, 4 miles in length, would also be constructed to control drifting of livestock between two grazing allotments located in both the Burns and Vale Districts.

Utility Corridor Routing and Development Actions

The proposed utility corridor would be designated as planned and would be available to route a proposed 500-kV powerline 13 miles through the eastern portion of the WSA, including construction of an access road along the length of the line.

Recreation Management Actions

Vehicle-oriented recreation would continue on 68 miles of ways and 27.5 miles of roads (including the designated, existing access routes in the Alvord

Desert ACEC and Mickey Basin RNA), and cross-country travel would continue on the Alvord Desert playa.

Recreation use is estimated to be less than 200 visitor days per year. Most use is associated with vehicle use utilizing existing roads and ways and cross-country travel on the Alvord Desert playa when it is used as a play area by off-highway vehicle, land yacht and glider enthusiasts.

Summary

Table 1 summarizes the projected management actions under each alternative. Table 2 summarizes the environmental consequences of each alternative.

3. Affected Environment

This section discusses only those activities or resources which influence the character of the study area, or that may be affected by the alternatives.
Wilderness Values

Naturalness

The Alvord Desert and East Alvord WSAs appear to be in a natural condition. There are few unnatural features and they are relatively unnoticeable.

The Alvord Desert study area contains five reservoirs, five wells, a horse trap, the remnants of what might have been an old homestead or stagecoach stop, two borrow pits, several small mineral prospecting scars, two fences totaling 20 miles and 16 vehicle ways totaling 65 miles. These developments have a minor visual influence due to the terrain within the study area. Much of the area is relatively flat to gently rolling so most developments are not visible from the surrounding terrain. Overall, the combination of gentle terrain and relatively few developments substantially lessens the impact of the developments on the natural character of the area. About two percent of the study area is influenced by these features.

The water developments which occur within the WSA are scattered. The largest concentration of developments occurs along the northern boundary road, where there are three wells and a reservoir. These are not large developments and they have a minor influence on the area.

Along the southern boundary, there is also a well and a reservoir. The remaining well is located in the northeastern corner of the WSA. Both of these wells were once wind-powered and are not presently working. These three developments have a minimal effect on the area.

The remnants of the old homestead or stage stop are not visible from the surrounding lands as the foundation and small portions of the walls are all that remain.

The two borrow pits and small prospecting scars are located along the southeastern boundary. They are fairly minor disturbances and are not easily seen from the flat terrain in the immediate vicinity.

The two sections of BLM's district boundary and allotment division fence are located in the east-central portion of the WSA. These are not easily viewed and have a minor influence on the area.

The horse trap site is located just east of the district boundary fence west of Coyote Lake. This site consists of rock cribs and is visible from the higher terrain to the west. A way, 3 miles in length, provides access to the trap site. The overall influence, however, is minimal.

The study area's gentle terrain plays an important role in reducing the effects of the 65 miles of ways. Due to the topographic and vegetative screening, the vehicle ways are not substantially noticeable.

The most substantial source of outside sights and sounds is the boundary roads. Overall, these have a minor influence. They are not easily viewed and, with the exception of U.S. Highway 95, they are only lightly traveled. Other sources of outside sights and sounds are three wells, a reservoir, and ranching activities associated with the Alvord Ranch to the west and the Tudor Ranch on the northeast.

East Alvord WSA contains 11 unnatural features. Eight of the developments are reservoirs, one is a well and reservoir combination, and two are vehicle ways totaling 3 miles. It is estimated that approximately three percent of the area is influenced by these features.

The water developments are scattered around the perimeter of the WSA. They are relatively minor disturbances, and because of their locations in small shallow drainages, each has a limited influence on the natural qualities of the area.

The way in the northwest corner is not easily viewed except in the immediate vicinity. It is located in flat terrain away from any higher areas which would provide views of the development, and it is some what screened by the surrounding vegetation. The other way is longer and located in the bottom of a drainage. It can easily be viewed from the adjacent higher terrain. This way tends to blend in with the drainage course and is also slightly screened by vegetation. In several places, the way receives more use from livestock and wild horses than from vehicles. In addition to these identified ways, there are vehicle tracks in the northwestern corner which are the result of occasional off-highway vehicle use. These tracks do not influence the naturalness of the area.

Outside sights and sounds have a minor effect on the wilderness values. There are seven water developments and 31 miles of boundary roads.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

The Alvord Desert WSA and the East Alvord WSA have outstanding opportunities for for solitude. The Alvord Desert WSA is very large and would give a feeling of vastness to any wilderness visitor. The East Alvord WSA is not as large but does provide outstanding opportunities for solitude. The topography of both WSAs consist of flat to gently-rolling terrain surrounded by lava cliffs and plateaus. The ridgelines and cliffs provide some topographic screening. The type of vegetation in both WSAs does not screen wilderness users from each other.

Military jet aircraft frequently use the area for low altitude training flights. During the daylight hours of high use periods, there may be as many as five low-level flights daily. The influence of these flights on a visitor's perception of solitude is quite temporary, but extreme for a short period of time (one minute or less). These flights do not have a significant, long-lasting, adverse effect on a visitor's opportunity to find solitude.

Opportunities for primitive recreation in the Alvord Desert and East Alvord study areas are outstanding. The primitive recreation activities include day hiking, backpacking, camping, horseback riding and sightseeing.

Opportunities for day hiking are outstanding in both WSAs. In the Alvord Desert WSA, the opportunities for day hiking are best in the western and central portions of the area. The primary day hiking attractions would be the Alvord Desert playa and basin area, the plateau area east of the Alvord, and the Coyote Lake area. Also of interest to the day hiker are the expansive views and open space available throughout the entire WSA.

In the East Alvord WSA opportunities for hiking are not as outstanding, but the topography of the area is diverse and offers a variety of country for hiking. Mickey Hot Springs and the sand dunes, only short distances from the western boundary, would be of interest to the hiker. The rest of the WSA probably does not have enough attractions to draw a substantial amount of day visitors.

There are opportunities for backpacking and camping in both WSAs. However, Alvord Desert WSA offers greater opportunity due to its larger size and more numerous attractions. Day hiking could easily be extended into an overnight trip, although the availability of water is limited. The attractions mentioned for day hiking are also likely to be most attractive to the backpacker. In the Alvord Desert WSA, the size of the study area would also attract hikers looking for an extended trip.

Both WSAs provide ample opportunities for level campsites and relatively easy hiking, but there is a lack of water throughout the entire area.

Opportunities for horseback riding are similar to those for backpacking. The gentle terrain, with the exception of the escarpment, and the size of the two areas allow virtually unlimited use. However, as with backpacking, the major deterrent to horseback riding would be the general lack of water throughout the WSAs.

Opportunities for sightseeing and photography are excellent in both WSAs, including background views of the Steens and Sheepshead Mountains. Other background views outside the WSAs, though less dominant, include the Pueblo and Trout Creek Mountains as a panorama to the south. In the East Alvord WSA, outside scenic views also include vistas of the Alvord Desert and the vast open expanse of land to the east, including Coyote Lake.

Within the Alvord Desert WSA are impressive views of the Alvord playa, the escarpment and plateau area, and the vastness of the open space associated with the general area. The number of opportunities for photographing and viewing typical desert wildlife and plants are particularly high along the eastern portion of the Alvord Basin and in the Coyote Lake area. A visitor might also have an opportunity to view and photograph wild horses.

Special Features

There are several special features of the Alvord Desert and East Alvord WSAs which enhance the value of the area as wilderness (see Map 2). Geology, vegetation, wildlife, wild horses and scenic quality are special features of both WSAs. Cultural resources are found primarily in the Alvord Desert study area.

The geology of this area is not unique to the Great Basin, but it is not common in Oregon and would be of interest to the wilderness visitor. Most of the geologic features of interest are in the western portion of the WSAs. The most significant feature of the area is the Alvord Desert. This area is roughly defined as the large basin between Steens Mountain on the west and a prominent ridgeline on the east. This basin is a structural graben (sunken area) bounded by fault zones and their associated escarpments (including Steens Mountain and the ridgeline on the east). The dominant feature of this basin is the intermittently dry playa.

Mickey Hot Springs is located in the northern part of the East Alvord study area. This is one of the hottest springs in BLM's Burns District, reaching temperatures of up to 210F. Also associated with the springs are a variety of mud pots and steam vents. The location of the mud pots and vents appears to change frequently because of changes in hydrothermal activity. This site is unique within the Burns District and represents a definite attraction in the WSA.

The most significant vegetative features of the area occur on the eastern side of the Alvord Basin, where the Alvord ACEC, designated to protect both vegetation and wildlife values, is located. The ACEC extends from the eastern edge of the playa to the top of the plateau to the east and is distinctive due to the diversity of habitats within a small area. This diversity is the result of differences in topography, alkalinity, moisture and soil.

The East Alvord WSA also contains 510 acres of the 560-acre Mickey Basin RNA, which provides management and protection of a winterfat *(Eurotia lanata)* community of a size and condition which is uncommon in Oregon.

Other special vegetation features include two plant species of special interest which have been identified in the Alvord Desert WSA. They are solitary milkvetch *(Astragalus solitarius)* and Davis peppercress *(Lepidium davisii)*. The Vegetation section discusses these plants further.

The Alvord Desert and East Alvord WSAs also support an unusual variety of reptiles, small animals and insects; most are found within the ACEC. Also of importance to the entire area is the presence of kit fox habitat. These WSAs are within the northernmost range of this species, which is on the ODFW's List of Threatened and Endangered Species and a candidate species under the Federal Endangered Species Act. The snowy plover, also on ODFW's List of Threatened or Endangered Species, nests along the western edge of the Alvord playa. (The Wildlife section provides more information on the animal life of the area.)

Both WSAs contain cultural resources; those in the Alvord Desert WSA are especially noteworthy. Archeological sites in the WSA give evidence of adaptations of prehistoric Indians to environments that have long since disappeared. In addition, portions of four wagon roads cross parts of the WSA. (See Cultural Resources section for more information.)

Scenery in portions of both WSAs is outstanding including the entire western portion of both WSAs from the major ridgeline east of the Alvord Desert playa west to the Steens Mountain. The Alvord Desert playa, the sand dunes, and the ridgeline combine to create outstanding contrasts in color, landform and vegetation.

Diversity in National Wilderness Preservation System (NWPS)

According to the Bailey-Kuchler system of classifying ecosystems, the Alvord Desert and East Alvord WSAs are in the Intermountain Sagebrush Province, and the potential natural vegetation is saltbush-greasewood.

The Basin and Range section of the Oregon Natural Heritage Plan identifies 10+ecosystems which occur in these WSAs. The upland communities are big sagebrush/spiny hopsage, shadscale-spiny hopsage-budsage community complex, and big sagebrush/bluebunch wheatgrass. Communities in the alkaline areas are bare playa and playa margin communities, greasewood/saltgrass, big sagebrush/greasewood, Great Basin wildrye community, and a sand dune series (beach ridges) from active unvegetated dunes through completely stabilized dunes. The East Alvord WSA also has a winterfat community. A black sagebrush community complex occurs in the Alvord Desert WSA.

The study areas are within five hours' driving time of one standard metropolitan statistical area: Boise, Idaho.

Energy and Mineral Development

The geology, energy and mineral resources of the East Alvord and Alvord Desert WSAs were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, correlating rock units in the WSA with similar environments in areas known to contain mineral resources and by evaluating a geochemical sampling program conducted by BLM. Technical details of the evaluation are in a mineral resources assessment report on the Alvord Desert Geologic Resource Area (GRA), Harney County Oregon, prepared by TERRADATA (a consulting firm under contract with BLM) and in a BLM report on Fields GRA.

The WSAs are within GRAs which have been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level). A description of the rating system is provided in the Statewide EIS volume.

Table 3 shows the energy and mineral classifications in the study area. Map 6 shows where energy and mineral resources have moderate or high potential for occurrence in the WSA.

Surface rocks in the WSA are Tertiary and younger volcanic and sedimentary rocks. These consist predominantly of basalt and andesite flows, welded tuffs, and sedimentary deposits of clay, silt, sand and gravel (mostly in the form of unconsolidated alluvium and colluvium) and playa deposits.

Energy Resources

Late Paleozoic marine sedimentary rocks, as well as thick accumulations of fluvial and lacustrine Tertiary sedimentary rocks buried beneath volcanics, indicate a moderate potential for the occurrence of oil and gas in both WSAs. Although both WSAs have had past oil and gas leases, neither contains an oil and gas lease as of October 16, 1987.

The western portions of both WSAs lie within the Alvord KGRA. The KGRA covers nearly all of the Alvord Desert Basin including all of the Alvord playa and that part of the basin area in the northern portion of the East Alvord WSA. About one-quarter of each WSA falls within the KGRA. These portions of the WSAs are considered to have a high favorability for geothermal potential. (The area rated high for geothermal resources within the WSAs roughly encompasses the portion of the KGRA in the study area, although the KGRA follows legal subdivisions.) Indications for the occurrence of this resource in the WSAs include relatively young volcanics, hot springs, associated faults and high heat flow. A June 1985, Department of Energy geothermal resource assessment for the Pacific Northwest ranked the Alvord geothermal area fairly high, in the top 10 out of the 96 best high temperatures in the Pacific Northwest. The remainder of the East Alvord WSA and the central portion of the Alvord Desert has moderate favorability for geothermal resources. In the Alvord Desert WSA (as of October 16, 1987) there were two geothermal leases covering 2,000 acres. There were no geothermal leases in the East Alvord WSA.

Mineral Resources

The south edge of the East Alvord WSA and portions of the Alvord Desert WSA are rated moderately favorable for the occurrence of diatomite in tuffaceous lakebed sediments. Similar geologic units in other Tertiary basins in southeastern Oregon are known to contain diatomite deposits.

Based on geochemical assessment, five areas have been identified as having moderate potential for the occurrence of diatomite, uranium, silver, copper, beryllium and zinc. All but zinc are considered to be strategic and critical minerals, but there are no known deposits in the WSAs. As of October 16, 1987, no mining claims were present in either WSA.

Due to the presence of unconsolidated sand and gravel as well as various types of volcanic rocks, the study area is considered to have a large reserve of rock and aggregate materials. One BLM community pit and seven material sites operated by Malheur County and Oregon State Highway Division are included in the WSA.

Vegetation

The most extensive community in the Alvord Desert and East Alvord WSAs is a vegetation complex where a big sagebrush/bunchgrass community and a shadscale/budsage community are intermittently dominant. This complex occurs across the upland portions of the WSAs. These communities occur both independently and intermixed, but characteristics of these communities are the same in either case.

The big sagebrush/bunchgrass community occurs in the nonsaline basins and alluvial bottoms as well as in the uplands. Species commonly associated with the big sagebrush include squirreltail, Sandberg's bluegrass, Thurber's needlegrass, cheatgrass, Indian ricegrass and spiny hopsage. At the highest elevations, bluebunch wheatgrass occurs. The estimated ecological status is mid-seral. Potential natural community is big sagebrush, spiny hopsage, Indian ricegrass and squirreltail. Bluebunch wheatgrass is the potential natural community grass species at the higher elevations.

The shadscale/budsage community occurs in a band on the north side of Coyote Lake and near the Alvord Desert as well as in the complex. Associated with this community are Indian ricegrass, squirreltail, cheatgrass and spiny hopsage. The estimated successional stage is early to mid-seral. The primary potential natural community species are shadscale, budsage and Indian ricegrass.

A greasewood/saltgrass community exists in the low elevation alkaline sites on the eastern and southern areas of the Alvord Desert, around Coyote Lake, near Lower Willow Creek Well and Waterhole and along the other smaller playas. Common species are Great Basin wildrye, alkali sacaton, Indian ricegrass and spiny hopsage in addition to greasewood and saltgrass. The estimated ecological status is early to mid-seral. The potential natural community contains alkali sacaton and Great Basin wildrye with some greasewood and saltgrass.

In the Alvord Desert WSA, a Great Basin wildrye community occurs in conjunction with the greasewood/saltgrass community. Common species are big sagebrush, gray rabbitbrush, greasewood, saltgrass and squirreltail. The estimated ecological status is early to mid-seral. The primary potential natural species is Great Basin wildrye. Big sagebrush and squirreltail are also present in the potential natural community.

Sand dunes and areas overblown by sand occur along the eastern edge of the Alvord Desert in both study areas, as well as near Serrano Point, along the southern edge of Alvord Desert and in the Coyote Lake area in the Alvord Desert WSA. The vegetation on the dunes is greasewood, spiny hopsage, four-wing saltbush, horsebrush, cheatgrass, Indian ricegrass, saltgrass and thickspike wheatgrass. Big sagebrush is also common, particularly on the overblown areas. Other species common to the overblown areas are spiny hopsage, Indian ricegrass and needle-and-thread grass. The estimated ecological status of the sandy communities is mid-seral. The potential natural community is big sagebrush, four-wing saltbush, Indian ricegrass, needle-and-thread grass and saltgrass.

In the East Alvord WSA, there are some very small areas containing a community of winterfat. Associated species are few, but include Nuttal's saltbush cheatgrass, halogeton and other forbs. The potential natural community is primarily winterfat. Nuttal's saltbush, Indian ricegrass creeping wildrye and squirreltail also occur in the potential natural community, but in very minor amounts. The Mickey Basin RNA provides management and protection for a winterfat community in this WSA.

A community present in the northeastern portion of the Alvord Desert WSA is black sagebrush/bunchgrass. This community occurs more extensively outside the WSA. Species associated with black sagebrush are cheatgrass, squirreltail, Sandberg's bluegrass, shadscale and budsage. The estimated ecological status is mid-seral. The potential natural community contains black sagebrush, Sandberg's bluegrass, squirreltail and, in some areas, bluebunch wheatgrass, Thurber's needlegrass and spiny hopsage.

The Alvord Desert ACEC provides protective management for many communities, including several of those within the WSAs. Those in the ACEC are the sand dune communities, playa and playa margin communities, greasewood-saltgrass, big sagebrush-spiny hopsage and shadscale-budsage complex.

Two plant species of special interest (mentioned in the Special Features section) occur in the Alvord Desert WSA: *Astragalus solitarius* (solitary milkvetch), and *Lepidium davisii* (Davis' pepper cress). These plants are candidates for Federal listing as threatened or endangered.

Wildlife

In addition to the typical wildlife species of the Basin and Range, the Alvord Desert area has a great diversity of reptiles and small rodents. Most of the reptiles found in the northeastern Great Basin are present. Common reptiles include side-blotched lizard, sagebrush lizard, western fence lizard, western whiptail lizard, leopard lizard, collared lizard, desert horned lizard, Great Basin rattlesnake, yellow-bellied racer and striped whipsnake.

Bird diversity in the area is low, which is characteristic of saltbush-greasewood shrub habitats. Black-throated sparrow, horned lark, sage thrasher, sage sparrow, loggerhead shrike and raven are common species. Prairie falcon and golden eagle are raptors common to the area, but are not abundant.

Chukars are found near rimrocks, but are not abundant. Other species using rimrocks include bushy-tailed woodrats, little brown myotis (bat), bobcat and nesting raptors.

The Alvord playa and the other playas in the WSAs are occasionally flooded during spring and early summer and receive light use by migrating waterfowl and shorebirds. Coyote Lake is also seasonally flooded and is used by shorebirds, such as American avocets. Waterfowl and shorebirds use the small ponds (one acre) near Mickey Hot Springs.

Snowy plover, which is on the ODFW's List of Threatened or Endangered Species and a candidate for Federal listing, nest along the west edge of the Alvord playa, near the Alvord Ranch and near Alvord Hot Springs. Avocets also use this area.

Killdeer, common snipe, yellow warblers, marsh hawks, montane meadow mice and Belding's ground squirrels use the meadows and seeps found along the west edge of the Alvord playa.

Dunes along the east side of the Alvord playa provide habitat for mammals such as antelope ground squirrels, least chipmunks, dark kangaroo mice and Ord's kangaroo rats. Black-throated sparrows are a common songbird of the dunes.

Few deer use the area and most of this use is along the west boundary near the Alvord Ranch. However, some deer may range into the southeastern portions of the Alvord Desert WSA from nearby winter ranges. Antelope utilize the eastern half of the Alvord Desert WSA during the winter. Over 340 antelope have been counted within the Malheur County portion of the WSA during the winter, but usually number about 110.

Northern kit fox, a species once thought to be extirpated from Oregon, is present in the area. ODFW considers the kit fox threatened in Oregon.

The Alvord Desert ACEC contains many species which are uncommon in the area. Eleven reptiles and twenty mammals have been found within the ACEC. The notable mammals include kit fox, dark kangaroo mouse, little pocket mouse, grasshopper mouse, white-tailed antelope ground squirrel and Merriam's shrew. Reptiles include western whiptail lizards, leopard lizards, collared lizards, desert horned lizard and the Great Basin spade-foot toad. These species are all either at the northern limit of their range or uncommon in Oregon.

Watershed

There are no perennial streams in the Alvord Desert and East Alvord WSAs.

Livestock Grazing

Portions of four grazing allotments (Alvord, Tule Springs, Andrews, Coyote Lake) are within the Alvord Desert WSA. A portion of the Alvord grazing allotment is within the East Alvord WSA. All public land in the WSAs are permitted for grazing. Current estimated livestock use and season of use for each allotment and each WSA is shown in Table 4.

Existing range improvements in the Alvord Desert WSA are five reservoirs, five wells and two fences totaling 20 miles in length. The existing range improvements in the East Alvord WSA are nine reservoirs and one well.

Livestock operators use motor vehicles on ways approximately 30 times per year for maintenance of developments and management of livestock.

Utility Corridor Routing

Both Pacificorp and the Bonneville Power Administration (BPA) have under long-term consideration the construction of a 500-kV power transmission line through an east-west utility corridor which would cross 13 miles of the east-central portion of the study area.

Cultural Resources

The Alvord Desert WSA contains a variety of archaeological sites, including some Paleo-Indian sites not often found in the northern Great Basin. These sites are associated with the shores of vast ancient lakes.

Four historic wagon roads, one of which was the Oregon Central Military Wagon Road, traverse the Alvord Desert. Sections of these historic wagon roads exist today in the form of vehicle ways which are used occasionally by hunters and ranchers. The remnants of what was probably an old homestead or stage coach stop can also be found on the eastern side of the WSA.

Recreation Use

Existing use of the area for hunting is low. Deer and antelope are found in both WSAs, but their numbers are limited and the animals are scattered. Upland game birds such as chukars are also found, but better hunting areas are available closer to population centers. The limited hunting which does occur is associated with motor vehicles for access.

These two WSAs currently receive off-highway vehicle use. The Alvord playa is popular for OHVs such as motorcycles, dune buggies and four-wheel drive vehicles. The sand dunes on the eastern side receive a light use associated with these activities.

The Alvord playa and other alkali lakebeds are popular for land sailing during the summer. Airplane gliders also take off and land on the playas.

Primitive recreation use within the two study areas is low.

Local Personal Income

Livestock use at the current level of 5,134 AUMs and recreation use totaling 200 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $61,608 for livestock grazing and $2,400 related to recreation use of the WSA, for an overall total of $64,008. The Statewide EIS volume discussed the term local personal income and how income figures have been derived.

4. Environmental Consequences

Introduction

This section discusses the environmental consequences of implementing each of the alternatives. Resources and activities not significantly affected by any of the alternatives are not discussed. The Statewide volume discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness: 273,300 acres
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

Both WSAs would be designated wilderness, and wilderness values within the entire 273,300 acres would be protected by legislative mandate. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. Wilderness designation under this alternative would preserve a large part of the Alvord Desert, which covers more than 35 square miles and is the dominant feature of these WSAs. Special features, including the sand dunes on the east side of the Alvord playa which contain a variety of plant and animal life, and the large escarpment to the east of the Alvord Basin, would be protected. In the East Alvord WSA, Mickey Hot Springs and a gentle-sloping sagebrush-covered plateau would be protected.

Naturalness

The naturalness of the areas' topographic features, closed drainage basins, desert plateaus and escarpments would be enhanced by prohibiting motorized vehicle use. Closure of 65 miles of ways in the Alvord Desert, which influence approximately 9,250 acres (3.7 percent of the WSA) and 3 miles of ways in the East Alvord WSA, which influence approximately 45 acres (2 percent of the WSA) would allow the ways to revegetate within two to three growing seasons, making them substantially unnoticeable. Restrictions on vehicle use would also prevent new ways from being established as a result of cross-country travel. This closure would take precedence over the present off-highway vehicle designation for the Alvord Desert ACEC and Mickey Basin RNA which allows vehicle travel on existing, designated access routes.

The closure of 68 miles of ways would greatly improve the overall naturalness of the areas, mainly in the eastern half of the WSA, where the majority of the ways are located.

Maintenance of 11 reservoirs, (two in Alvord Desert and nine in East Alvord WSA) would require use of mechanized heavy equipment approximately once every 10 years. Six wells (five in Alvord Desert WSA and one in East Alvord WSA) would be maintained approximately every two years. This infrequent use of vehicles would not prevent the closed ways from revegetating.

Solitude

Opportunities for solitude would be improved, especially in the eastern half and the northwestern corner of Alvord Desert WSA, where the majority of the ways are located. Closure of 68 miles of ways (65 miles in Alvord Desert WSA and 3 miles in East Alvord WSA) and the Alvord Playa would eliminate 100 visitor days of motorized recreation use.

Maintenance of 14 reservoirs (five in Alvord Desert WSA and nine in East Alvord WSA) at 10-year intervals would cause short-term disturbance of solitude when mechanized heavy equipment would be brought into the area. Maintenance of six wells (five in Alvord Desert WSA and one in East Alvord WSA) approximately every two years would also cause short-term disturbance of solitude.

Primitive and Unconfined Recreation

Elimination of vehicle-oriented recreation on the playa and closure of 68 miles of ways would improve primitive recreation opportunities such as day hiking, backpacking, camping, horseback riding and sightseeing.

Special Features

Designation of the two WSAs under the all wilderness alternative would protect the outstanding special features in their present condition. For both WSAs, this would include geologic values such as the Alvord Desert and Mickey Hot Springs, two plant species of special interest, wildlife and botanical values, including those associated with the ACEC, and outstanding scenic quality which influences views from the High Steens WSA and other surrounding WSAs.

The botanical, wildlife and scenic values would be maintained. This includes plant species of special interest as well as the vegetative communities found in the ACEC and RNA. A wide variety of wildlife associated with the northern Great Basin would be protected.

Ongoing impacts from incidental OHV use to plant and animal communities and species of special interest, would be reduced by closing the entire area, including 68 miles of ways and the Alvord Playa. These impacts include soil movement and compaction, impairment of scenic values and minor seasonal disturbance to wildlife inhabiting the study area.

Conclusion: Wilderness designation of the entire 273,300 acres within the Alvord Desert WSA and East Alvord WSA would result in protection of the existing wilderness values and enhancement of these values.

Impacts on Energy and Mineral Development

Wilderness designation would close 221,847 acres in the Alvord Desert WSA and 22,240 acres in the East Alvord WSA to mineral exploration and development. The 5,370 acres of private land and the mineral estate of 29,213 acres of split-estate lands would remain open to mineral development.

Energy Development

Projected energy exploration and development for geothermal resources would be precluded on 244,087 acres. Exploration could occur on the 5,370 acres of private land and the 29,213 acres of split-estate lands. No exploration or development is projected, due to a lack of interest and the absence of geothermal leases. Projected development of one 10-megawatt geothermal power plant in East Alvord WSA would be precluded under wilderness designation.

Due to a lack of geologic evidence, no known petroleum-bearing formations, a subsurface not conductive to the formation of hydrocarbons and the absence of any existing oil and gas leases, only casual exploration for oil and gas is projected.

Conclusion: Wilderness designation would preclude the development of one projected 10-megawatt geothermal powerplant.

Mineral Development

Projected exploration for diatomite, uranium, silver, copper, beryllium and zinc would be precluded on 244,087 acres. Exploration and development could occur on 5,370 acres of private lands and the mineral estate of 29,213 acres of split-estate lands. However, due to a lack of sufficient evidence to justify an extensive exploration/development program, no exploration or development is projected.

Seven grandfathered material sites would remain open, but one community site would be closed. The demand for sand and gravel from this pit is low and the impact would be minor.

Conclusion: No impact to locatable mineral development is expected. A low level of production from the existing community sand and gravel pit would be lost.

Impacts on Vegetation

Wilderness designation would not introduce significant new conditions or influences to the WSAs as a whole. The vegetative composition, therefore, as described in the vegetative section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid- to late seral stages overall. Utilization of key forage species would remain at approximately 55 percent and residual ground cover would be maintained.

The 68 miles of closed ways, totaling approximately 70 acres, would revegetate within approximately two to three growing seasons.

Conclusion: The 68 miles of closed ways would revegetate within two to three years. There would be little or no change in the vegetation over the remainder of the WSAs.

Impacts on Wildlife

Wildlife habitat would be preserved. Wildlife habitat for a summer population of 20 deer and 35 antelope and a winter population of 50 deer and 110 antelope would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives. In the Alvord Desert WSA, the construction of two guzzlers to provide water for antelope and other wildlife would not be allowed because the projects are not necessary for the continued existence or welfare of wildlife and the purpose is not to restore deteriorated habitat. Benefits to antelope and other wildlife from additional water would be foregone.

The closure of 68 miles of ways would have little impact on wildlife due to the low amount of vehicle use that occurs.

Conclusion: The wildlife habitat and populations would be maintained on 273,300 acres designated wilderness. However, added water sources for antelope and other wildlife species would be foregone due to constraints on construction of two proposed guzzlers.

Impacts on Horse Trap Access

The 3-mile way to the Coyote Lake trap site would be closed to all vehicle use, precluding the use of the trap to gather excess wild horses. Another site would have to be found outside the Alvord Desert WSA which would increase expense and inconvenience in managing the wild horse herds.

Conclusion: Use of the Coyote Lake horse trap would be precluded, increasing expense and inconvenience in managing the wild horse herds.

Impacts on Livestock Grazing

Based on preliminary studies, a reduction in livestock grazing use of 30 AUMs is projected, depending upon the results of monitoring. This reduction is necessary to correct unfavorable forage conditions in the Andrews Allotment portion of the Alvord Desert WSA. This would result in livestock grazing use of 4,488 AUMs and an additional 450 AUMs of temporary nonrenewable use. This temporary use could become permanent depending upon the results of monitoring.

No new range improvements would be constructed and projected increases in livestock grazing that would be realized from those projects would be foregone. Wilderness designation would preclude the allocation of 6,533 AUMs of currently available but unallocated livestock forage.

A portion of the Alvord allotment, in the East Alvord WSA, would remain at the current estimated use level of approximately 618 AUMs and an additional 190 AUMs of temporary nonrenewable use. This use could also become permanent depending upon the results of monitoring.

Vehicle use for checking livestock and range management would be precluded on 68 miles of ways with some increase in expenses and inconvenience for livestock operators.

Maintenance of the existing 20 miles of fence would be done on foot or by horseback and pack animals. Mechanized heavy equipment would be used on the average of once every 2 years and once every 10 years for maintenance of six wells and 14 reservoirs, respectively. Construction of 4 miles of fence would be precluded, thus allowing livestock to drift into areas where grazing may be damaging to vegetation.

Conclusion: Livestock grazing use would be reduced by 30 AUMs to the level of 4,488 AUMs of total use in the Alvord Desert WSA and 618 AUMs of total use in the East Alvord WSA. Controlling livestock at critical vegetative growing periods would be foregone by precluding the construction of 4 miles of fence. There would be some additional cost and inconvenience to livestock operators due to the closure of 68 miles of ways.

Impacts on Utility Corridor Routing and Development

Under the all wilderness alternative, the proposed east-west utility corridor could not be designated within the WSA. The alternative corridor around the

WSA would be 3 miles longer. This would increase construction costs by $820,000 to $1,150,000 depending on the type of line design, and increase annual maintenance and line load costs by some $13,000 to $88,000. (See Statewide EIS volume for explanation of these figures.)

Conclusion: The proposed east-west power utility corridor would be rerouted around the WSAs adding 3 miles to the corridor length, with associated increased powerline construction and maintenance costs.

Impacts on Recreation Use

The entire 273,300 acres would be closed to motorized recreation, including 68 miles of ways and Alvord Playa. Primitive recreation in the form of day hiking, backpacking, camping, horseback riding and sightseeing would be expected to increase slightly.

Some vehicle-oriented recreation is expected to be displaced to other areas, but most use would continue on the dead-end roads entering the WSAs. Overall recreation use would be reduced from less than 200 visitor days to less than 100 visitor days per year, with most of the reduction associated with eliminating cross-country travel on the Alvord Desert playa (including land yacht and glider use) and other smaller alkali lakebeds.

Conclusion: Wilderness designation would result in a net reduction in the areas' overall recreation use level from less than 200 visitor days per year to less than 100 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would decrease by 30 AUMs. Overall recreation use would decrease by 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $1,560 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $1,600.

Enhanced Wilderness

Recommended suitable for wilderness: 245,115 acres (assuming acquisition of 4,785 acres of private land)

Recommended nonsuitable for wilderness: 32,970 acres (all in the Alvord Desert WSA)

Impacts on Wilderness Values

The enhanced wilderness alternative would add 245,115 acres to the NWPS with acquisition of the 4,785 acres of private land. Acquisition of the mineral estate of 21,398 acres of split-estate lands is also proposed. The effects of this alternative would be nearly the same as the all wilderness alternative; however, acquisition of the private land and mineral estate would prevent potential disturbance from mineral exploration on these parcels. This would preserve the wilderness qualities of the area. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. Special features, including scenic values outstanding scenic values, geologic values such as the Alvord Desert and Mickey Hot Springs, two plant species of special interest, wildlife and botanical values, including those associated with the ACEC would be protected.

A total of 32,970 acres recommended nonsuitable would not be designated wilderness and wilderness values would not receive special legislative protection.

Naturalness

The naturalness of the Alvord Desert playa would be subject to disturbance from the resource uses. Surface disturbing activities such as off-highway vehicle use would continue to influence naturalness on the 32,970 acres recommended as nonsuitable for wilderness. The 780-acre brush control and seeding project in the nonsuitable area would affect naturalness by changing the vegetative characteristics in a portion of the Alvord Desert WSA. This project would visually influence 19,500 acres.

Sixty-eight miles of ways (65 in Alvord Desert WSA and 3 in the East Alvord WSA), 12 miles of boundary road separating the two WSAs and the seven dead-end roads (15.5 miles) in the Alvord Desert WSA would be closed. These access routes, influencing approximately 15,200 acres (6.2 percent of the suitable area) would be allowed to revegetate within two to five growing seasons, making them substantially unnoticeable. Naturalness in the suitable portion would be enhanced by the closure of interior roads, in addition to the ways, restricting vehicle use and the resulting surface disturbance. This closure would take precedence over the present off-highway vehicle designation for the Alvord Desert ACEC which allows vehicle travel on 10 miles of road and 3 miles of ways. One mile of road in the Mickey Basin RNA is part of the WSA boundary and would remain open.

Acquisition of the mineral estate of the split-estate lands would eliminate the possibility of development and the need for access to these scattered parcels. (Many of the split-estate parcels in the western part of the WSA are within the Alvord KGRA and have a high geothermal potential.)

Maintenance of 14 reservoirs would require use of heavy equipment once every 10 years. This infrequent use would not prevent the ways from revegetating. Six wells (five in Alvord Desert WSA and one in East Alvord WSA) would be maintained approximately every 2 years.

Solitude

Opportunities for solitude would be improved because the seven dead-end roads and 12 miles of boundary road separating the two WSAs would be closed in addition to the ways. Closure of interior vehicle access routes (totaling 95.5 miles) would eliminate approximately 100 visitor days of motorized recreation use. However, continued use of motor vehicles by recreationists on the Alvord Desert playa would detract from opportunities for solitude, as vehicles on the playa could be seen and heard from the sand dunes east of the playa and within the area recommended as suitable for wilderness. This would reduce opportunities for solitude in that portion of the wilderness.

Use of heavy equipment in developing the 780-acre seeding in the nonsuitable portion of the Alvord Desert WSA would cause short-term disturbance of solitude. Maintenance of 14 reservoirs at 10-year intervals would cause short-term disturbance of solitude when mechanized heavy equipment would be brought into the area. Maintenance of six wells (five in Alvord Desert WSA and one in East Alvord WSA) approximately every 2 years and gathering of wild horses approximately every 4 years would also cause short-term disturbance of solitude.

Primitive and Unconfined Recreation

Under the enhanced wilderness alternative, opportunities for primitive recreation would be maintained or improved in the portion recommended suitable. Closing approximately 12 miles of the boundary road between the two WSAs and seven dead-end roads in addition to the ways would increase the opportunities for high quality primitive recreation.

Elimination of 100 visitor days of motorized vehicle use per year on 245,115 acres designated wilderness would enhance opportunities for primitive recreation. Motor vehicles used by recreationists on the Alvord Desert playa would continue to detract from opportunities for primitive recreation on the playa. Off-highway vehicles on the playa could be seen and heard from the sand dunes east of the playa and within the area recommended as suitable for wilderness, affecting opportunities for primitive recreation in that portion of the wilderness.

Special Features

Eliminating motorized vehicle use on 245,115 acres, including the 15.5 miles of dead-end roads and the 12 miles of boundary road separating the two WSAs, in addition to the 68 miles of ways, would reduce the potential for impacts to special features.

The potential for impacts by incidental cross-country use to plant and animal communities and species of special interest would be reduced by closing a total of 95.5 miles of interior access routes. The closure of 27.5 miles of roads and the acquisition of 4,785 acres of private land and 21,398 acres of the mineral estate of split-estate lands would provide additional protection. The absence of any need for motorized access to the private and split-estate parcels would prevent possible surface disturbance, removal of vegetation, impairment of scenic values or disruption of wildlife. Snowy plover habitat would only be slightly affected by vehicle use because these moist areas are usually avoided by vehicles.

The special features of the western side of the WSA would be subject to disturbance from development. In the area recommended as nonsuitable, this includes the outstanding scenic values associated with the Alvord desert playa which influence views from the High Steens WSA and surrounding WSAs as well as snowy plover and shorebird habitat near the western edge of the playa. The proposed 780-acre brush control and seeding would impact the scenic values, but would not occur in the vicinity of the snowy plover and shorebird habitat.

Kit fox could be slightly affected through a reduction in small mammals due to brush control.

Conclusion: Wilderness designation of 245,115 acres would protect and enhance existing wilderness values. The acquisition of the mineral estate of 21,398 acres of split-estate lands would further enhance the total area by preserving wilderness values on all lands within the wilderness boundaries. Projected range improvements in the nonsuitable portion would both directly and indirectly impair wilderness values over approximately 19,500 acres with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

Enhanced wilderness designation would close 218,932 acres within the WSAs to all forms of mineral entry. Development would also be precluded on an additional 26,183 acres of acquired private land and mineral estate as proposed under this alternative.

Energy Development

Energy exploration and development would be precluded on 245,115 acres within the WSAs.

Projected exploration and development for geothermal resources would be precluded on 245,115 acres. Exploration could occur on 32,970 acres recommended nonsuitable in the Alvord Desert WSA. No exploration or development is projected, due to a lack of interest and the absence of any geothermal leases. Projected development of one 10-megawatt geothermal powerplant in the East Alvord WSA would be precluded under this alternative.

Due to a lack of geologic evidence, no known petroleum bearing formations, a subsurface not conducive to the formation of hydrocarbons and the absence of any existing oil and gas leases, only casual exploration for oil and gas is projected.

Conclusion: Wilderness designation would preclude the development of one projected 10-megawatt geothermal powerplant.

Mineral Development

Exploration for diatomite, uranium, silver, cooper, beryllium and zinc which have a moderate potential for occurrence based on indirect evidence would be precluded on 245,115 acres.

Exploration and development could occur on the 32,970 acres recommended nonsuitable. However, there are no known developable deposits of mineral commodities and no mining claims within the nonsuitable area. It is postulated that only casual exploration for mineral resources would occur in the nonsuitable area under this alternative.

Seven grandfathered material sites would remain open in the suitable portion, as would the community pit in the nonsuitable portion.

Conclusion: No impact to locatable mineral development is expected.

Impacts on Vegetation

A 780-acre brush control and seeding would be established in the nonsuitable portion of the Alvord Desert WSA and would change the present vegetative community of big sagebrush/cheatgrass to a community dominated by crested wheatgrass. Wilderness designation of the recommended suitable portion would not introduce any significant new conditions or influences to the WSAs as a whole. The vegetative composition, therefore, as described in the vegetative section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid-seral to late seral stages overall.

The 68 miles of closed ways would revegetate within approximately two to three growing seasons. The 15.5 miles of closed dead-end roads and 12 miles of closed boundary roads would revegetate within two to five growing seasons. Approximately 120 acres would revegetate from road and way closures.

Conclusion: The 68 miles of closed ways would revegetate within two to three growing seasons and the closed dead-end and boundary roads would revegetate within two to five growing seasons. The vegetation of the 780-acre brush control and seeding in the nonsuitable portion of the Alvord Desert WSA would change to crested wheatgrass while the rest of the suitable and nonsuitable areas would remain the same.

Impacts on Wildlife

Wildlife habitat for a summer population of 20 deer and 35 antelope and a winter population of 50 deer and 110 antelope would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives.

The proposed sagebrush control and seeding to increase livestock forage would benefit wintering antelope by improving their habitat in the area recommended nonsuitable. Impacts on deer habitat would be negligible due to the few deer using the area. Many nongame species would have their habitat reduced by sagebrush removal. Reductions in numbers of small mammals over 780 acres would also slightly impact kit fox because of loss of prey.

Snowy plover and shorebird habitat near the western edge of the Alvord Desert playa in the Alvord Desert WSA would be recommended nonsuitable and disturbance to the habitat could occur from off-highway vehicle use. Shorebird habitat near Mickey Hot Springs and Coyote Lake would be within the area recommended suitable and would be preserved.

Two guzzlers, proposed for construction in the suitable portion of the Alvord Desert WSA, would not be allowed. Benefits to antelope and other wildlife species from additional available water would be foregone.

The closure of 68 miles of ways and 27.5 miles of roads would have little impact on wildlife due to the low amount of vehicle use that occurs on these routes.

Conclusion: Deer winter range and associated populations would be maintained on 245,115 acres designated wilderness. Antelope winter range would be improved and nongame species, including kit fox, would have their habitat reduced on 780 acres. Shorebird habitat and populations near Mickey Hot Springs and Coyote Lake would be preserved, but minor disturbance to snowy plover and shorebird habitat and populations could occur near the western edge of the Alvord Desert playa. Additional water sources for antelope and other wildlife would be foregone.

Impacts on Horse Trap Access

The 3 mile way to the Coyote Lake trap site would be closed to all vehicle use, precluding the use of the trap to gather excess wild horses. Another site would have to be found outside the Alvord Desert WSA which would increase expenses and inconvenience in managing the wild horse herds.

Conclusion: Use of the Coyote Lake horse trap would be precluded, increasing expenses and inconvenience in managing the wild horse herds.

Impacts on Livestock Grazing

Livestock grazing use in the Alvord Desert WSA and within portions of four allotments would increase from 4,518 AUMs to 5,198 AUMs. This includes an increase of 230 AUMs from projected range improvements in the nonsuitable portion of the WSA. Also included in the increase would be 450 AUMs of temporary nonrenewable use which could become permanent depending upon the result of monitoring. The 6,533 AUMs of available but unallocated forage in the suitable portion would not be allocated to livestock.

A portion of the Alvord allotment in the East Alvord WSA would remain at the current estimated level of approximately 618 AUMs, an an additional 190 AUMs of temporary nonrenewable use. This use could also become permanent depending upon the results of monitoring. The allotments, with seasons of use and distribution of AUMs would remain as shown in Table 4.

Some 780 acres in the Andrews allotment portion of the Alvord Desert WSA would be treated to control sagebrush and reseeded to crested wheatgrass. This project would be located in the area designated nonsuitable for wilderness to offset a shortage of available forage and a projected reduction in the Alvord Desert WSA.

Vehicle use for checking livestock and range management, would be precluded on 68 miles of ways and 27.5 miles of roads. This closure would involve 12 miles of road separating the two WSAs, which would result in a substantial increase in expenses and considerable inconvenience for the livestock operators. The roads closed under this alternative are used frequently in “loop” fashion to supervise livestock grazing and to check water wells that need to be turned on and off manually. Closing any portion of these loop roads would cause the operator to backtrack 54 miles since the roads are a portion of the loop route.

Maintenance of the existing 20 miles of fence would be done on foot or by horseback and pack animals. Mechanized heavy equipment would be used on the average of once every 2 years and once every 10 years for maintenance of five wells and 14 reservoirs, respectively.

Conclusion: Livestock grazing would increase to 5,198 AUMs of total use in the Alvord Desert WSA and to 808 AUMs of total use in the East Alvord WSA.

There would be substantial additional inconvenience and cost to the livestock operator due to the closure of 12 miles of boundary roads.

Impacts on Utility Corridor Routing and Development

Under the enhanced wilderness alternative, the proposed east-west utility corridor would not be designated within the WSA. The alternative corridor around the WSA would be 3 miles longer. This would increase construction costs by $820,000 to $1,150,000 depending on the type of line design, and increase annual maintenance and line load costs by some $13,000 to $88,000. (See Statewide EIS volume for explanation of figures.)

Conclusion: The proposed east-west power utility corridor would be rerouted around the WSAs adding 3 miles to the corridor length, with associated increased powerline construction and maintenance costs.

Impacts on Recreation Use

Motorized use would be precluded on 245,115 acres, assuming acquisition of private lands, including 68 miles of ways and 27.5 miles of roads. Existing use of the suitable area for primitive types of recreation is very low and would be expected to increase slightly. The quality of primitive recreation would also be expected to improve slightly by closing the 12 miles of boundary road separating the two WSAs and the seven dead-end roads totaling 15.5 miles.

In the nonsuitable portion, recreation use would continue on Alvord Desert playa including motorized, land yacht and glider use.

Vehicle-oriented recreation would be displaced to other areas and be partially substituted by primitive recreation. The net impact of this alternative on all recreation use in the suitable area would be a reduction in use from less than 200 visitor days to less than 100 visitor days per year.

Conclusion: Wilderness designation would result in a reduction in the areas' overall recreation use from less than 200 visitor days per year to less than 100 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would increase by 870 AUMs, including 640 AUMs of temporary nonrenewable use which could become permanent. Overall recreation use would decrease by 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $9,240 per year.

According to economic data supplied by the livestock operator in this area, closure of 12 miles of road between the Alvord Desert and East Alvord WSAs would increase annual operating costs by an estimated $6,000. The closure would necessitate a 54-mile return trip up to four times per week during the winter months when propane water well pumps are manually restarted and refueled along an 80-mile loop route.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by approximately $9,200.

Proposed Action

Recommended suitable for wilderness: 69,165 acres
Recommended nonsuitable for wilderness: 204,135 acres

Impacts on Wilderness Values

This alternative would designate 69,165 acres of wilderness, all in the Alvord Desert WSA. Wilderness values and special features in the suitable area, including naturalness, solitude, primitive recreation and scenic values, would be protected. Acquisition of the mineral estate of 4,475 acres of split-estate lands would preserve wilderness values.

Under the proposed action, 204,135 acres would not be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation and the areas' special features including outstanding scenic values, geologic values such as Alvord Desert and Mickey Hot Springs and wildlife and botanical values associated with the ACEC would be subject to the effects of projected management actions.

Naturalness

Naturalness in the area recommended as suitable for wilderness would be preserved in its present condition.

Naturalness would be slightly enhanced as a result of eliminating most motorized vehicle use within the 69,165 acres of WSA recommended suitable for wilderness. Closure of 2.5 miles of way and 3 miles of two dead-end roads in the area recommended suitable would allow them to revegetate and become substantially unnoticeable in two to five growing seasons. This closure would take precedence over the present off-highway vehicle designation for the Alvord Desert ACEC which allows vehicle travel on existing, designated access routes. Continued vehicle use on 65.5 miles of ways and 24.5 miles of roads would maintain the impact of vehicle tracks upon naturalness on approximately 14,200 acres in the nonsuitable portions.

On 204,135 acres recommended nonsuitable for wilderness, the naturalness of the Alvord Desert playa, the escarpment in the East Alvord WSA and Barren Valley in the eastern half of the Alvord Desert WSA would be subject to disturbance from other resource uses.

Projected geothermal exploration and development in the East Alvord WSA (a 10-megawatt power plant, collection field, and 2.5 miles of access roads and transmission lines) disturbing 80 surface acres would visually influence naturalness on approximately 5,700 acres or 25 percent of that WSA. Most of this impact would be in the vicinity of Mickey Hot Springs.

The projected construction of 13 miles of a 500-kV powerline and access road in the eastern third of the Alvord Desert WSA would disturb approximately 30 surface acres and visually influence naturalness on approximately 3,900 acres or 1.6 percent of the WSA.

The development of a seeding in the nonsuitable portion of the Alvord Desert WSA would alter 780 acres of vegetation and visually influence naturalness on 19,500 acres or 7.8 percent of the WSA.

The construction of 4 miles of drift fence between two grazing allotments located in both the Burns and Vale Districts would disturb 4 surface acres and visually influence 400 acres in the Alvord Desert WSA.

The construction of two guzzlers to provide additional water for antelope and other nongame species would disturb 2 surface acres and visually influence naturalness on 10 acres.

In the 204,135 acres not recommended suitable, a small projected increase in motorized recreation use would locally impair naturalness.

Solitude

The elimination of 100 days of motorized vehicle use per year would enhance solitude on the 69,165 acres designated wilderness. Within the 204,135 acres not designated wilderness, the small projected increase in motorized vehicle use on solitude would be negligible, except on the Alvord playa where off-highway vehicle use, land sailing and launching and landing of airplane gliders is prevalent during the summer months.

Continued use on 65.5 miles of existing ways and associated human activity would cause repeated short-term, local impairment of opportunities for solitude in the nonsuitable area.

Motor vehicles used by recreationists on the Alvord Desert playa would detract from opportunities for solitude on the playa. Off-highway vehicles on the playa could be seen and heard from the sand dunes east of the playa and within the area recommended as suitable for wilderness. This would reduce opportunities for solitude in that portion of the wilderness.

Within the areas recommended nonsuitable, opportunities for solitude would be reduced by human activities associated with projected geothermal developments.

Maintenance of five reservoirs at 10-year intervals and four wells at 2-year intervals would cause short-term disturbance of solitude when mechanized heavy equipment would be brought into the area.

Use of equipment in developing the 780-acre seeding and 4 miles of fence in the nonsuitable portion of the Alvord Desert WSA would cause short-term disturbance of solitude.

Use and maintenance of one 3-mile way and the Coyote Lake horse trap approximately every 4 years would cause short-term disturbance of solitude while motorized vehicles and equipment were in the area.

Periodic use of the 13 miles of access road along the proposed 500-kV powerline route would also cause short-term disturbance of solitude while motorized vehicles and equipment were in the area.

Primitive and Unconfined Recreation

Under the proposed action, opportunities for primitive recreation would be maintained or improved in the area recommended suitable for wilderness. Elimination of 100 visitor days of motorized vehicle use per year on 69,165 acres designated wilderness would enhance opportunities for primitive recreation.

Vehicle use would continue on 3 miles of way to the Coyote Lake horse trap in the suitable portion. Such use would intrude upon primitive, nonmotorized recreation opportunities such as hiking, backpacking, camping, hunting and horseback riding.

In the nonsuitable area, motor vehicles used by recreationists on the Alvord Desert playa would detract from opportunities for primitive recreation on the playa. Off-highway vehicles on the playa could be seen and heard from the sand dunes east of the playa and within the area recommended as suitable for wilderness. This would reduce opportunities for primitive recreation in that portion of the wilderness.

Exploration and development of a proposed geothermal power plant in the East Alvord WSA around Mickey Hot Springs would intrude on primitive and unconfined recreation activities. Visitors seeing primitive and unconfined recreation would tend to avoid the area.

Increased access from construction of the proposed 13 miles of 500-kV powerline and road in the eastern third of the Alvord Desert WSA would also reduce opportunities for primitive recreation.

Special Features

The potential for impacts by incidental OHV use to plant and animal communities and species of special interest would be reduced by closing a total of 2.5 miles of ways in the suitable area. The acquisition of 4,475 acres of mineral estate would provide additional protection. The absence of any need for motorized access to the split-estate parcels would prevent possible surface disturbance, removal of vegetation, impairment of scenic values and disruption of wildlife.

Wilderness values and special features identified within the areas recommended nonsuitable (204,135 acres, including 181,895 acres in the Alvord Desert WSA and 22,240 acres in the East Alvord WSA) would be subject to disturbance from other resource uses and activities. This acreage includes the Alvord Desert playa area and the snowy plover habitat as well as the eastern portions of the Alvord Desert WSA and the northwestern portion of the East Alvord WSA including Mickey Hot Springs and Mickey Basin RNA.

Scenic values, including some of the area with outstanding scenery, would be reduced by projected development of the 10-megawatt geothermal power plant in East Alvord WSA and the western side of Alvord Desert WSA. This development would be visible from the ridge within the WSAs as well as the surrounding higher elevation WSAs such as High Steens. However, the impact of of a steam plume from the stack of this size power plant would be minimal when seen from long distance viewing points.

Construction of access roads, transmission lines and buildings would involve removal of vegetation, some movement of soil and other surface materials and placement of human developments out of context with the present characteristic landscape.

The proposed 780-acre brush control and seeding would also impact the scenic values along the western edge of the Alvord Desert WSA as would the construction of 13 miles of a 500-kV powerline and access road in the eastern third of the WSA. The brush control would also reduce kit fox habitat.

The construction of 4 miles of drift fence in the eastern third of the Alvord Desert WSA would cause minimal impacts to vegetation and minimal surface disturbance but would still be a human development out of context with the present characteristic landscape.

Conclusion: Wilderness designation of 69,165 acres would protect existing wilderness values with probable enhancement of those values. Within the 204,135 acres not designated wilderness, projected activities would impair wilderness directly and indirectly over approximately 29,000 acres with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

The proposed action would close 64,690 acres within the Alvord Desert WSA to all forms of mineral entry. Development would also be precluded on an additional 4,475 acres of mineral estate of split-estate lands if acquired as proposed under this alternative.

Energy Development

Energy exploration and development would be precluded on 69,165 acres within the Alvord Desert WSA.

Projected exploration and development for geothermal resources would be precluded on 69,165 acres within the Alvord Desert WSA. Exploration and development could occur on 204,135 acres of area recommended nonsuitable. A projected 10-megawatt power plant would be developed in the portion of the East Alvord WSA.

Conclusion: Projected development of one 10-megawatt geothermal power plant would occur.

Mineral Development

Projected exploration for diatomite, uranium, silver, copper, beryllium and zinc would be precluded on 69,165 acres. Exploration could occur on 204,135 acres in the area recommended nonsuitable for wilderness designation. However, there are no known developable deposits of mineral commodities and no mining claims within the nonsuitable area. It is postulated that only casual exploration for mineral resources would occur in the nonsuitable area under this alternative.

The material sites would not be impacted since they are located in the nonsuitable portions of the WSAs.

Conclusion: No impact to locatable mineral development is expected. The low level of mineral material production from eight sites would continue.

Impacts on Vegetation

A 780-acre brush control and seeding would be established in the nonsuitable portion of the Alvord Desert WSA, and would change the present vegetative community of big sagebrush/cheatgrass to a community dominated by crested wheatgrass. Wilderness designation of the recommended suitable portion would not introduce any significant new conditions or influences to the WSAs as a whole. The vegetative composition, therefore, as described in the vegetative section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid-seral to late seral stages overall.

The 2.5 miles of closed way would revegetate within approximately two to three growing seasons. The 3 miles of closed dead-end roads, would revegetate within two to five growing seasons. The 3 miles of way to the wild horse trap left open to vehicle use would not revegetate.

Geothermal exploration would remove vegetation from approximately 8 acres on 30 drill sites. Those areas would revegetate within approximately three growing seasons following rehabilitation. Construction of a geothermal powerplant and accompanying access roads and transmission lines would remove vegetation from 71 surface acres.

Construction of 13 miles of 500 kV powerline would disturb vegetation around power poles but revegetation would occur within two growing seasons. The construction of a road along the powerline would remove vegetation from approximately 30 acres. The road, left open for powerline inspection and maintenance, would not revegetate.

Conclusion: The 2.5 miles of closed way and 3 miles of closed dead-end road would revegetate within two to five growing seasons. In the nonsuitable area, vegetation would be altered on 780 acres and removed on approximately 100 acres.

Impacts on Wildlife

Wildlife habitat for a summer population of 20 deer and 35 antelope and a winter population of 50 deer and 110 antelope would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives.

The proposed sagebrush control and seeding to increase livestock forage would benefit wintering antelope by improving their habitat in the area recommended nonsuitable. Impacts on deer habitat would be negligible due to the few deer using the area. Many nongame species would have their habitat reduced by sagebrush removal over 780 acres. This would affect kit fox because their prey would be reduced.

Snowy plover and shorebird habitat near the western edge of the Alvord Desert playa in the Alvord Desert WSA would be recommended nonsuitable and slight disturbance to the habitat could occur from off-highway vehicle use. Shorebird habitat in the small wetlands around Mickey Hot Springs in the East Alvord WSA, which would also be recommended nonsuitable, would be disturbed by projected geothermal development. The shorebird habitat around Coyote Lake would be within the suitable portions and would be preserved.

Two guzzlers proposed for construction in the nonsuitable portion of the Alvord Desert WSA would be allowed and antelope and other wildlife species would benefit from the additional available water.

The closure of 2.5 miles of way and 3 miles of dead-end roads would have little impact on wildlife due to the low amount of vehicle use that occurs.

Conclusion: Deer winter range and associated populations would be maintained on 69,165 acres designated wilderness. Antelope winter range would be improved and nongame species habitat, including kit fox, would be reduced on 780 acres. Disturbance to shorebird habitat and populations around Mickey Hot Springs would occur and slight disturbance would also occur to shorebird and snowy plover habitat and populations along the western edge of the Alvord Desert playa. Additional water for antelope antelope and other wildlife species would be realized by construction of two proposed guzzlers.

Impacts on Horse Trap Access

The 3 miles of ways to the Coyote Lake trap site would be improved and maintained on the average of once every 4 years, if needed, to utilize the trap for gathering excess wild horses. Heavy trucks are used to transport horses and access would be maintained to allow passage of these vehicles.

Conclusion: The 3 miles of way to the Coyote Lake horse trap would be maintained on the average of once every 4 years to allow for the passage of heavy trucks when gathering excess wild horses at the trap site.

Impacts on Livestock Grazing

Livestock grazing use in the Alvord Desert WSA and within portions of four allotments would increase from 4,518 AUMs to 11,731 AUMs. This increase includes 230 AUMs from projected range improvements in the nonsuitable portion of the WSA. Also included in the increase is 450 AUMs of temporary nonrenewable use that could become permanent depending upon those results of monitoring and 6,533 AUMs of available but unallocated forage in the nonsuitable portion that would be allocated to livestock.

A portion of the Alvord allotment in the East Alvord WSA would remain at the current estimated level of livestock grazing use of 618 AUMs and an additional 190 AUMs of temporary nonrenewable that could also become permanent depending upon the result of monitoring. The allotment with seasons of use and distribution of AUMs, would remain as shown in Table 4.

Vehicle use for checking livestock and range management, would be precluded on 2.5 miles of ways and 3 miles of roads with some increase in operator costs and some inconvenience. Maintenance of the existing 7 miles of fence would be done on foot or by horseback and pack animals. Mechanized heavy equipment would be used on the average of every 2 years and once every 10 years for maintenance of four wells and 14 reservoirs, respectively.

Under this alternative, 780 acres in the Andrews allotment portion of the Alvord WSA would be treated to control sagebrush and reseeded to crested wheatgrass. This project would be located in the area designated nonsuitable for wilderness to offset a shortage of available forage a projected reduction in the Andrews allotment.

Conclusion: Livestock grazing use would increase to 11,731 AUMs in the Alvord Desert WSA and 808 AUMs in the East Alvord WSA. There would be some additional cost and some slight inconvenience to livestock operators due to closure of 2.5 miles of ways and 3 miles of roads.

Impacts on Utility Corridor Routing and Development

The proposed action would allow for the location of a utility corridor across 13 mile of the nonsuitable eastern portion of the Alvord Desert WSA, as proposed. Costs for construction and annual maintenance of the proposed 500-kV powerline would not be increased due to the shorter route across the WSA.

Conclusion: The proposed utility corridor would be designated in the eastern portion of Alvord Desert WSA and the 500-kV powerline would be constructed.

Impacts on Recreation Use

Motorized use would be precluded on 69,165 acres recommended suitable in the Alvord Desert WSA, including 2.5 miles of way and 3 miles of roads. This would slightly reduce recreation use in the suitable portion which would be less than 100 visitor days per year.

Vehicle-oriented recreation would be displaced to other areas and be partially substituted by primitive recreation in the form of day hiking, backpacking, camping, horseback riding and sightseeing. These opportunities would be expected to improve and use would increase slightly in the recommended suitable area. However, it would not be sufficient to offset the reduction in vehicle-oriented recreation and the overall recreation use would continue to be less than 200 visitor days per year.

Motorized vehicle use would continue on the 204,135 acres recommended nonsuitable, including 65.5 miles of ways, the 12 miles of road separating the two WSAs and the Alvord Playa. Such use is expected to increase slightly.

Conclusion: The area's current recreation use would remain at less than 200 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would increase by 7,403 AUMs, including 640 AUMs of temporary nonrenewable use which could become permanent. Projected energy and mineral development would amount to one 10-MW geothermal powerplant. Overall recreation use would remain at 200 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $88,836 per year plus an unknown level of increase attributable to the projected energy development.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by approximately $89,000.

No Wilderness/No Action

Recommended suitable for wilderness: 0 acres
Recommended nonsuitable for wilderness: 273,300 acres

Impacts on Wilderness Values

Under the no wilderness alternative, the entire 273,300 acres would not be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation and the areas' special features would be subject to the effects of projected management actions, including the sand dunes on the east side of the Alvord playa which contain a variety of plant and animal life and the large escarpment to the east of Alvord Basin would not be protected. In the East Alvord WSA, Mickey Hot Springs and a gentle-sloping sagebrush covered plateau would not be protected.

Naturalness

The naturalness of the areas' topographic features, closed drainage basins, desert plateaus and escarpments would continue to be impacted by vehicle use.

The total impact on the perception of naturalness from projected actions would be approximately 44,700 acres. Continued vehicle use on 68 miles of ways and 27.5 miles of roads would maintain the impact of vehicle tracks upon naturalness on approximately 15,200 acres (5.6 percent of the combined WSAs).

All projected actions, including range improvements, water developments and mineral exploration and development would be allowed under the no wilderness alternative. These activities would reduce naturalness by disturbing native vegetation or by altering the existing contour of the land.

Projected geothermal exploration and development in the East Alvord WSA (one 10-megawatt powerplant, collection field, and 2.5 miles of access roads and transmission lines) disturbing approximately 90 surface acres would visually influence naturalness over the long term on approximately 5,700 acres or 25 percent of that WSA. Most of this impact would be in the vicinity of Mickey Hot Springs.

Mineral exploration, disturbing a total of 10 surface acres, would cause short-term and localized impacts to naturalness. Required reclamation and natural revegetation would leave little long-term evidence of disturbance to naturalness.

The construction of 13 miles of 500-kV powerline and access road in the eastern third of the Alvord Desert WSA would disturb approximately 30 surface acres and visually influence naturalness on approximately 3,900 acres or 1.6 percent of the WSA.

The development of a seeding in the Alvord Desert WSA would alter vegetation on 780 acres and visually influence naturalness on 19,500 acres or 7.8 percent of the WSA.

The construction of 4 miles of drift fence between two grazing allotments located in both the Burns and Vale Districts would disturb 4 surface acres and visually influence 400 acres in the Alvord Desert WSA.

The construction of two guzzlers to provide additional water by antelope and other nongame species would disturb 2 surface acres and indirectly influence naturalness on approximately 10 acres.

Solitude

Continued vehicle use on 68 miles of existing ways and 27.5 miles of existing roads and associated human activity would cause repeated, short-term local impairment of opportunities for solitude. Long-term impairment of solitude would be evident when the projected geothermal powerplant is constructed and vehicles and heavy equipment are in the area around Mickey Hot Springs.

Motor vehicles used by recreationists on the Alvord Desert playa would detract from opportunities for solitude on the playa. Off-highway vehicles on the playa could be seen and heard from the sand dunes and surrounding area east of the playa. This would reduce opportunities for solitude in that portion of the Alvord Desert WSA.

Maintenance of 14 reservoirs at ten-year intervals and 6 wells at two-year intervals would cause short-term disturbance of solitude when mechanized heavy equipment would be brought into the area.

Use of equipment in developing the 780-acre seeding project and 4 miles of fence in the Alvord Desert WSA would cause short-term disturbance of solitude.

Use and maintenance of one 3-mile way and the Coyote Lake horse trap approximately every four years would cause short-term disturbance of solitude while motorized vehicles and equipment were in the area.

Periodic use of the 13 miles of access road along the proposed 500-kV powerline route would also cause short-term disturbance of solitude while motorized vehicles and equipment were in the area.

Primitive and Unconfined Recreation

Under this alternative, opportunities for primitive recreation would be reduced by continued vehicle use, mining activities and development of range improvement projects.

Vehicle use would continue on existing roads and ways. Such use would intrude upon primitive, nonmotorized recreation opportunities such as hiking, backpacking, camping, hunting and horseback riding in the localized areas around the 68 miles of ways and 27.5 miles of roads.

Motor vehicles used by recreationists on the Alvord Desert playa would detract from opportunities for primitive recreation on the playa. Off-highway vehicles on the playa could be seen and heard from the sand dunes and surrounding area east of the playa. This would reduce opportunities for primitive recreation in that portion of the wilderness.

Exploration and development of a projected geothermal powerplant in the East Alvord WSA around Mickey Hot Springs would intrude on primitive and unconfined recreation activities and, in most instances, completely eliminate these types of opportunities in and around the area of intensive development. Visitors seeking primitive and unconfined recreation would tend to avoid the area.

Increased access from construction of the proposed 13 miles of 500-kV powerline and road in the eastern third of the Alvord Desert WSA would also reduce opportunities for primitive recreation.

Special Features

Continued vehicle use of existing roads and ways would maintain the impacts upon special features including geologic features, vistas, wildlife values, outstanding scenery and vegetation. These impacts include soil compaction, rutting of riparian/meadow areas, impairment of scenic vistas and minor seasonal disturbance of deer and antelope.

Geothermal exploration would result in minimal short-term disturbance, but more long-term disturbance from development of a 10-megawatt power plant could be expected to impact vistas, scenery and vegetation around Mickey Hot Springs as well as as the values of the surrounding higher elevation study area such as High Steens WSA. However, the impact of the steam plume from the stack of this size power plant would be minimal when seen from long distance viewing points.

Construction of access roads, transmission lines, buildings and development of the brush control and seeding would involve removal of vegetation, some movement of soil and other surface materials and placement of human developments out of context with the present characteristic landscape.

The construction of 4 miles of drift fence in the eastern third of the Alvord Desert WSA would cause minimal impacts to vegetation and minimal surface disturbance but would still be a human development out of context with the present characteristic landscape. Although the RNA and ACEC would emphasize the protection of some plant and animal species and communities, they could still be subject to disturbing activities because the areas would not be closed to mineral exploration and development.

Conclusion: In the absence of wilderness designation, projected activities and continued uses would both directly and indirectly impair wilderness values over approximately 44,700 acres with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

Energy Development

Geothermal exploration and development are projected in the area primarily due to the high potential for occurrence of geothermal resources on 48,760 acres of the WSAs. Projected development of a 10-megawatt geothermal power plant would occur under this alternative in East Alvord WSA.

Conclusion: Projected development of one 10-megawatt geothermal power plant would occur in the East Alvord WSA.

Mineral Development

Projected exploration for diatomite, uranium, silver, copper, beryllium, zinc and production of sand and gravel would be permitted on the entire 273,300 acres. However, no development is projected for locatable minerals as exploration is not expected to prove the existence of any mineral resources that would prove economically competitive with other known deposits. Sand and gravel production would continue to be low.

Conclusion: Development of locatable minerals is not projected within the WSAs.

Impacts on Vegetation

A 780-acre brush control and seeding would be established, changing the vegetative community from big sagebrush/cheatgrass to crested wheatgrass. The ecological status in the remainder of the two WSAs would remain in mid- to late-seral stages.

The 68 miles of ways and 27.5 miles of roads would remain open to motorized vehicle use and would not revegetate.

Geothermal exploration would remove vegetation from approximately 16 surface acres on 60 drill sites. Those areas would revegetate within approximately three growing seasons following rehabilitation. Construction of a geothermal power plant and accompanying roads and transmission lines would remove vegetation from 71 surface acres.

Construction of 13 miles of 500-kV powerline would disturb vegetation around power poles, but revegetation would occur within two growing seasons. The construction of a road along the powerline would remove vegetation from approximately 30 acres and sections of the road left open for powerline inspection and public access, would not revegetate.

Construction of two guzzlers would disturb approximately two surface acres but vegetation would not be eliminated except at the actual location of the structures.

Conclusion: Continued vehicle access would not allow any of the roads or ways to revegetate. Vegetation would be altered on 780 acres and removed on approximately 100 acres.

Impacts on Wildlife

Wildlife habitat for a summer population of 20 deer and 35 antelope and a winter population of 50 deer and 110 antelope would be maintained. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives.

The proposed 780-acre sagebrush control and seeding to increase livestock forage would benefit wintering antelope by improving their habitat. Impacts on deer habitat would be negligible due to the few deer using the area. Many nongame species would have their habitat reduced by sagebrush removal over 780 acres. This would affect kit fox because their prey would be reduced.

Snowy plover and shorebird habitat near the western edge of the Alvord Desert playa and around Coyote Lake in the Alvord Desert WSA would be slightly disturbed by occasional off-highway vehicle use. The projected geothermal development at Mickey Hot Springs in the East Alvord WSA would disturb the small wetland's habitat of shorebirds and other wildlife species associated with the area.

Two guzzlers proposed for construction in the Alvord Desert WSA would benefit antelope and other wildlife species by providing additional available water.

The ways and roads would remain open to vehicle use, but there would be little impact to wildlife due to the low amount of vehicle use that occurs.

Conclusion: Deer winter range and associated populations would be maintained on 273,200 acres. Antelope winter range would be improved and nongame species habitat, including kit fox, would be reduced on 780 acres. Disturbance to shorebird habitat and populations around Mickey Hot Springs would occur and slight disturbance would also occur to shorebirds and snowy plover populations along the western edge of the Alvord Desert playa and around Coyote Lake. Additional water for antelope and other wildlife species could be realized by construction of two proposed guzzlers.

Impacts on Horse Trap Access

The 3 miles of ways to the Coyote Lake trap site would be improved and maintained on the average of once every 4 years, if needed, to utilize the trap for gathering excess wild horses. Heavy trucks are used to transport horses and access would be maintained to allow passage of these vehicles.

Conclusion: The 3 miles of way to the Coyote Lake horse trap would be maintained on the average of once every 4 years to allow for the passage of heavy trucks when gathering excess wild horses at the trap site.

Impacts on Livestock Grazing

Livestock grazing use in the Alvord Desert WSA and within portions of four allotments would increase from 4,518 AUMs to 11,731 AUMs. This includes an increase of 230 AUMs from projected range improvements in the nonsuitable portion of the WSA. An increase of 450 AUMs of temporary nonrenewable use could become permanent depending upon the results of monitoring and 6,533 AUMs of available but unallocated forage in the nonsuitable portion that would be allocated to livestock.

A portion of the Alvord allotment in the East Alvord WSA would remain at the current estimated level of livestock grazing use of 618 AUMs and an additional 190 AUMs of temporary nonrenewable use that could also become permanent depending upon the results of monitoring. The allotments, with seasons of use and distribution of AUMs would remain as shown in Table 4.

A 780-acre seeding would be developed to offset a projected forage allocation reduction in the Alvord Desert WSA. A fence, 4 miles in length, would be constructed to control drifting livestock between two grazing allotments located in both the Burns and Vale Districts. Vehicle use for checking livestock and range management would continue on 68 miles of ways and 27.5 miles of roads.

Conclusion: Livestock grazing would increase to 11,731 AUMs in the Alvord Desert WSA. Grazing use in the East Alvord WSA would increase to 808 AUMs.

Impact on Utility Corridor Routing and Development

The no wilderness alternative would allow for the location of a utility corridor across 13 miles of the eastern portion of the Alvord Desert WSA, as proposed. Costs for construction and annual maintenance of the proposed 500-kV powerline would not be increased due to the shorter route across the WSA.

Conclusion: The proposed utility corridor would be designated in the eastern portion of the Alvord Desert WSA and the 500-kV powerline would be constructed.

Impacts on Recreation Use

Primitive recreation would be subject to disturbance from the land uses and would decline slightly as a result of continued vehicle use and projected energy development. Motorized recreation use would continue in both WSAs on 256,090 acres (excluding 16,700 acres in Alvord Desert ACEC and 510 acres in Mickey Basin RNA) and on 68 miles of ways and 27.5 miles of roads.

A slight increase in antelope hunting and accompanying motorized vehicle use could occur as a result of the construction of two guzzlers and the seeding, which could concentrate animals in these areas. A slight increase in vehicle-oriented recreation use, combined with the influence of projected energy developments, could decrease primitive recreation use levels. However, the recreation use level would continue to be less than 200 visitor days per year.

Conclusion: Overall recreation use levels would remain at less than 200 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would increase by 7,403 AUMs, including the 640 AUMs of temporary nonrenewable use. Projected energy and mineral development would amount to one 10-MW geothermal powerplant. Overall recreation use would remain at 200 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $88,836 per year, plus an unknown level of increase attributable to the projected energy development.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by approximately $89,000.

Unavoidable Adverse Impacts of the Proposed Action

Under the Proposed Action, geothermal development would lead to unavoidable adverse impacts to wilderness values as a result of 80 acres of surface disturbance which would visually influence an additional 5,700 acres. Development of a range seeding would disturb 780 acres and visually influence 19,500 acres.

Construction of two wildlife guzzlers would disturb 2 acres and visually influence 10 acres, construction of 4 miles of drift fence would disturb 4 acres and visually influence 400 acres and construction of a 500-kV powerline would disturb 30 acres and visually influence 3,900 acres. The 65.5 miles of ways and 24.5 miles of roads would continue to impair wilderness values. Approximately 29,500 acres would be adversely impacted under this alternative.

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity

Under the Proposed Action, most existing short-term uses would continue with some minor inconvenience and expense to livestock operators resulting from the exclusion of vehicles for day-to-day activities in the suitable area.

All short-term uses would continue and future development options, including projected geothermal, range, utility line and wildlife development, would remain open on 204,135 acres designated nonsuitable. Long-term productivity of wilderness values would be directly lost on approximately 900 acres and indirectly on 29,500 acres with vegetative alteration and surface disturbance from projected geothermal, range, wildlife and powerline developments with further declines from other uses over the long term.

Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, there would be no irreversible or irretrievable commitment of the wilderness resources or any other resource in the suitable area.

On the 204,135 acres designated nonsuitable, projected geothermal development would result in an irreversible direct commitment of the wilderness resource on approximately 80 acres and indirectly on 5,700 acres with negligible amounts of the geothermal heat resource being irretrievably committed. Vegetative manipulation and construction of range, wildlife and powerline projects would directly reduce wilderness values by an additional 815 acres and indirectly by 23,800 acres.

5. Wilderness Manageability and Rationale for the Proposed Action

Manageability of the Area as Wilderness

With the exception of the Alvord Desert playa, both the Alvord Desert and East Alvord Wilderness Study Areas are manageable as wilderness under the all wilderness alternative. Manageability problems could occur, however, due to the presence of split-estate lands and private inholdings, and the unmarked private lands which form part of the Alvord Desert WSA boundary.

The Alvord Desert playa could not be managed as wilderness under the all wilderness alternative. This large, flat lakebed is a traditional recreation vehicle use area. It has a number of access points and virtually no physical barriers which could be used as boundaries to preclude vehicle use. Because access to the area could also be gained by crossing private land, restricting the use of the area to only wilderness visitors would be nearly impossible.

Management problems could occur under the all wilderness alternative due to the presence of scattered, unmarked, split-estate lands and private inholdings. If they were to be developed, these parcels could present problems in managing the area as wilderness.

All of these parcels, in both study areas, lie within an area which has moderate favorability for the occurrence of oil and gas resources and moderate to high favorability for geothermal resources. Several parcels are within areas having moderate favorability for minerals, uranium or diatomite. Depending on the location and size of any possible development and the need for access, maintaining wilderness values could be difficult.

The enhanced alternative and proposed action would be manageable as wilderness, but could also have some of the same problems as in the all wilderness alternative. The management of recreation vehicles on the Alvord playa would not be a factor with either of these alternatives as that portion of the Alvord Desert study area is not recommended for wilderness.

The presence of split-estate and private lands would not be a problem under the enhanced wilderness or proposed action if the private parcels and mineral estate were acquired as proposed. Although not expected to be a significant problem under any alternative, the enhanced alternative and proposed action reduce the amount of this adjacent private land by recommending the Alvord Desert playa and those portions of the Alvord Desert WSA where most of these lands are concentrated as nonsuitable for wilderness.

Rationale for the Selection of the Proposed Action

Portions of the Alvord WSA were recommended as suitable for wilderness after an analysis of how much it would add to the diversity of the ecosystems in the NWPS. This criterion was not applied in the first phase of the wilderness studies—the preparation of management framework plans (MFPs)—because the MFPs were prepared on a district-by-district basis.

From that geographical perspective, it would have been difficult to judge whether adding a particular WSA to the NWPS would add significantly to the diversity of ecosystems in the system. This judgment would be better made at the statewide level, where ecosystems in a WSA could be considered along with those in other WSAs and wilderness in the state and in adjacent States. Therefore, the ecosystem diversity criterion was applied when the Statewide EIS was prepared.

The Supplement to the Draft Environmental Impact Statement recommended that all of East Alvord WSA and a portion of Alvord Desert WSA be considered suitable for wilderness. However, the proposed action in the Final Environmental Impact Statement is that only a portion of the Alvord Desert WSA be recommended as suitable.

The road separating the two WSAs would remain open to allow the operator to monitor livestock and check wells. Closure of the roads would cause the operator to backtrack an excessive amount of miles. When East Alvord WSA is separated from the suitable portion of Alvord Desert WSA, it becomes nonsuitable due to the cumulative impacts of numerous unnatural features. Therefore, the limited size and character of the East Alvord WSA does not lend itself to outstanding opportunities for solitude and primitive forms of recreation.

The area recommended suitable for wilderness contains over 69,000 acres within the Alvord Desert WSA. The wilderness would include part of the eastern edge of the Alvord Basin, a large west-facing escarpment, plateau land and a playa at Coyote Lake on the extreme eastern edge of the area.

The area recommended as suitable for wilderness has only a few unnatural features. The influence of these features on the natural qualities of the area is minimal. By virtue of its size alone, the area has outstanding opportunities for solitude. Natural features such as the large escarpment in the WSA also makes substantial contributions to the opportunities for finding solitude.

Opportunities for participating in primitive and unconfined types of recreation are also outstanding within the area recommended as suitable. Recreational activities such as day hiking, sightseeing, viewing and study in desert plant and animals life, and photography are available.

The area recommended as suitable also contains several special wilderness features. These features include a large area of diverse plant and animal communities of the northern Great Basin Desert, two plant species of special interest, a community of winterfat, scenic values, geological features, cultural resources and wild horses.

Wilderness designation of the area recommended suitable would protect wilderness values and special features within an area which is capable of being managed as wilderness. The suitable area is not without conflicts, however. The western edge of the suitable area contains a portion of the Alvord KGRA and is within an area which has high favorability for the occurrence of geothermal resources. The remainder of the study area has moderate favorability for geothermal resources. The entire area recommended as suitable has also been identified as having moderate favorability for the occurrence of oil and gas. Small portions of the area recommended suitable also have moderate favorability for the occurrence of uranium, silver and diatomite.

Despite these conflicts, designation of the areas as wilderness is the most appropriate use of the land. The wilderness values associated with these portions of the Alvord Desert WSA outweigh the potential benefits to be gained from energy resource development.

Portions of the Alvord Desert WSA and all of East Alvord WSA were recommended as nonsuitable for wilderness because of potential problems in managing the area as wilderness or because the benefits of preserving options for resource development outweigh the benefits of preserving the limited number of wilderness values in the area.

The western portion of the Alvord Desert study area, the playa, is not manageable as wilderness because it would be difficult or impossible to control the existing vehicle-oriented recreation use the area receives. The playa is a traditional vehicle play area with several access points, some of which are from private land. Because there are no physical barriers to this area, it would be very difficult to prevent this traditional use from occurring.

The western and northern portions of the Alvord Desert WSA were recommended as nonsuitable to allow for projected geothermal resource exploration and development.

The eastern portion of the Alvord Desert WSA offers outstanding opportunities for solitude but no other significant wilderness values. A substantial amount of private land and mineral estate would have to be acquired to reduce potential manageability problems. In this area, the wilderness values are not of such significance to warrant the necessary acquisitions.

6. Summary and Analysis of Public Comments

Following is a summary of public comments specific to the WSA concerning adequacy of the analysis in this appendix and responses to those comments. These comments were received both in writing and oral testimony at public hearings during the comment periods for the 1985 Draft EIS and the 1987 Supplement to the Draft EIS. Comments concerning the BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning statewide issues and analysis are addressed in the Statewide volume.

Comment: Impacts on the view from Steens Mountain from geothermal development of the Known Geothermal Resource Area (KGRA) were not adequately analyzed. **Response:** See analysis under Impacts on Wilderness Values, Special Features, in Section 4, Environmental Consequences under the Proposed Action and No Wilderness Alternatives. The proposed 10-megawatt power plant projected to be developed near Mickey Hot Springs would impact scenic values, including minimal impacts to vistas from surrounding long-distance viewing points. Development of a power plant further south in the Alvord Desert is not considered likely based on available information.

Comment: Combine Alvord Desert WSAs with Steens Mountain WSAs (Steens Complex). **Response:** It is not feasible to close the boundary roads for the reasons described in Section 2, Description of Alternatives, under the discussion of alternatives considered but not analyzed.

Comment: The EIS failed to consider the new genus of insect found in native rush grass in the sand dunes. **Response:** See descriptions under Section 3, Affected Environment, Special Features. Notation is made of special features, including insects, found in the Alvord Desert Area of Critical Environmental Concern which is managed to protect scientific and educational values.

Comment: Many insects and other invertebrates depend on Alvord Desert region. EIS fails to discuss impact of not preserving sand dunes on insects. **Response:** See discussions in Section 2, Interrelationships and Section 3, Affected Environment on Alvord Desert ACEC and Mickey Basin RNA. These sections note the ACEC and RNA designations, their locations and purposes for establishment which include protection of scientific and educational values associated with the areas' vegetation and wildlife. The ACEC includes the sand dune area on the eastern side of Alvord Playa and Map 3 shows the location of the ACEC and RNA.

Comment: Wilderness values would be impaired because of frequent low-level military flights through the proposed wilderness areas. **Response:** Currently, there are two low-level military training routes (VR 1301 and IR 304) that directly cross the wilderness study areas. These particular training routes are estimated to operate 540 missions at approximately 1,500 feet above ground level and 1,224 missions at approximately 100 feet above ground level each year. The Bureau of Land Management is currently monitoring low-level aircraft flights over existing wilderness study areas to establish a data base. See further discusssions of these flights in Section 3, Affected Environment, under Opportunities for Solitude or Primitive and Unconfined Types of Recreation.

Comment: Annual operating costs of the livestock operator are not accurately portrayed in the Alvord Desert and East Alvord WSAs. **Response:** The figures supplied by the livestock operator showing estimated annual costs are included in Section 4, Environmental Consequences under Impacts on Local Personal Income for the enhanced wilderness alternative.

Table 1. Summary of Proposed Management Under Each Alternative, Alvord Desert (OR-2-74) and East Alvord (OR-2-73A) WSAs

Proposed Management	All Wilderness	Enhanced Wilderness	Proposed Action	No Wilderness/ No Action
Acres Designated as Wilderness	273,300	240,330	69,165	0
Acres Closed to OHV by Wilderness Designation	273,300	240,330	69,165	0
Miles of Roads Closed	0	27.5	3	0
Miles of Roads Constructed	0	0	15.5	15.5
Miles of Ways Closed [1]	68	68	2.5	0
Acres of Full Fee Estate Acquired [2]	0	4,785	0	0
Acres of Mineral Estate Acquired [3]	0	21,398	4,475	0
Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation	243,447	218,932	64,690	0
Number of Geothermal Power Plants Developed	0	0	1	1
Structural Wildlife Projects Developed: Catchments and Guzzlers (number)	0	0	2	2
Structural Livestock Projects Developed: Fences (miles)	0	0	4	4
Vegetative Manipulation for Livestock: Brush Control with Seeding (acres)	0	780	780	780
Increased Forage Allocation from Projects (AUMs)	0	230	230	230
Unallocated Existing Forage Allocated (AUMs)	0	0	6,533	6,533
Decreased Forage Allocation for Livestock (AUMs)	30	0	0	0
Miles Added to Potential Utility Corridors	3	3	0	0
Miles of Transmission Line Developed	0	0	15.5	15.5

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[1] Three miles of way to horsetrap would remain open under the proposed action.

[2] Upon acquisition, these additional lands would be incorporated into the wilderness area, closed to vehicle use, and withdrawn from mineral location and leasing.

[3] Upon acquisition of mineral estate, these lands would be withdrawn from mineral location and leasing.

Table 2. Summary of Environmental Consequences of Alternatives, Alvord Desert WSA (OR-2-74) and East Alvord WSA (OR-2-73A)

Resource or Activity	All Wilderness	Enhanced Wilderness	Proposed Action	No Wilderness/No Action
Wilderness Values	Wilderness designation of the entire 273,300 acres within the Alvord Desert WSA and East Alvord WSA would result in protection of the existing wilderness values and enhancement of these values.	Wilderness designation of 245,115 acres to the NWPS (assuming acquisition of 4,785 acres of private property) would protect and enhance existing wilderness values. The acquisition of 21,398 acres of mineral estate would further enhance the total area by preserving wilderness values on all lands within the wilderness boundaries. Projected range improvements in the nonsuitable portion would both directly and indirectly impair wilderness values over approximately 19,500 acres.	Wilderness designation of 69,165 acres would protect existing wilderness values with probable enhancement of those values. Within the 204,135 acres not designated wilderness, projected activities would impair wilderness directly and indirectly over approximately 29,000 acres with further declines from other potential uses over the long term.	In the absence of wilderness designation, projected activities and continued uses would both directly and indirectly impair wilderness values over approximately 44,700 acres with further declines from other potential uses over the long term.
Energy and Mineral Development	Wilderness designation would preclude the development of one projected 10-megawatt geothermal power plant. No impact to locatable mineral development is expected. A low level of production from the existing community sand and gravel pit would be lost.	No impact to locatable mineral development is expected.	Projected development of one 10-megawatt geothermal power plant would occur. No impact to locatable mineral development is expected. The low level of mineral material production from eight sites would continue.	Projected development of one 10-megawatt geothermal power plant would occur in East Alvord WSA. Development of locatable minerals is not projected within the WSAs.
Vegetation	The 68 miles of closed ways would revegetate within 2 to 3 years. There would be little or no change in the vegetation over the remainder of the WSAs.	The 68 miles of closed ways would revegetate within two to three growing seasons and the closed dead-end and boundary roads would revegetate within two to five growing seasons. The vegetation of the 780-acre brush control and seeding in the nonsuitable portion of the Alvord Desert WSA would change to crested wheatgrass while the rest of the suitable and nonsuitable areas would remain the same.	The 2.5 miles of closed ways and 3 miles of closed dead-end roads would revegetate within two to five growing seasons. In the nonsuitable area, vegetation would be altered on 780 acres and removed on approximately 100 acres.	Continued vehicle access would not allow any of the roads or ways to revegetate. Vegetation would be altered on 780 acres and removed on approximately 100 acres.
Wildlife	The wildlife habitat and populations would be maintained on 273,000 acres designated wilderness. However, added water sources for antelope and other wildlife species would be foregone due to constraints on construction of two proposed guzzlers.	Deer winter range and associated populations would be maintained on 245,115 acres designated wilderness. Antelope winter range would be improved and nongame species, including kit fox, would have their habitat reduced on 780 acres. Shorebird habitat near Mickey Hot Springs and Coyote Lake would be preserved, but minor disturbance to snowy plover and shorebird habitat and populations could occur near the western edge of the Alvord Desert playa. Additional water sources for antelope and other wildlife would be foregone.	Deer winter range and associated populations would be maintained on 69,165 acres designated wilderness. Antelope winter range would be improved and nongame species habitat, including kit fox, would be reduced on 780 acres. Disturbance to shorebird habitat and populations around Mickey Hot Springs would occur from geothermal development. Slight disturbance would also occur to shorebird and snowy plover habitat and populations along the western edge of the Alvord Desert playa. Additional water	Deer winter range and associated populations would be maintained on 273,300 acres. Antelope winter range would be improved and nongame species habitat, including kit fox, would be reduced on 780 acres. Disturbance to shorebird habitat and populations around Mickey Hot Springs would occur and slight disturbance would occur to shorebirds and snowy plover populations along the western edge of the Alvord Desert playa and around Coyote Lake.

Table 2. Summary of Environmental Consequences of Alternatives, Alvord Desert WSA (OR-2-74) and East Alvord WSA (OR-2-73A) (continued)

Resource or Activity	All Wilderness	Enhanced Wilderness	Proposed Action	No Wilderness/No Action
			sources for antelope and other wildlife species would be realized by construction of two proposed guzzlers.	Additional water for antelope and other wildlife species could be realized by construction of two proposed guzzlers.
Horse Trap Access	Use of the Coyote Lake horse trap would be precluded, increasing expense and inconvenience in managing the wild horse herds.	Use of the Coyote Lake horse trap would be precluded, increasing expense and and inconvenience in managing the wild horse herds.	The 3 miles of way to Coyote Lake horse trap would be maintained on the average of once every 4 years to allow for the passage of heavy trucks when gathering excess wild horses at the trap site.	The 3 miles of way to the Coyote Lake horse trap would be maintained on the average of once every 4 years to allow for the passage of heavy trucks when gathering excess wild horses at the trap site.
Livestock Grazing	Livestock grazing would be reduced by 30 AUMs to the level of 4,488 AUMs of total use in the Alvord Desert WSA and 618 AUMs of total use in the East Alvord WSA. Controlling livestock at critical vegetative growing periods would be foregone by precluding the construction of 4 miles of fence. There would be some additional cost and inconvenience to livestock operators due to the closure of 68 miles of ways.	Livestock grazing would increase to 5,198 AUMs of total use in the Alvord Desert WSA and 808 AUMs of total use in the East Alvord WSA. There would be substantial additional inconvenience and cost to the livestock operators due to the closure of 12 miles of boundary roads.	Livestock grazing would increase to 11,731 AUMs in the Alvord Desert WSA and 808 AUMs in the East Alvord WSA. There would be some additional cost and some slight inconvenience to livestock operators due to closure of 2.5 miles of ways and 3 miles of roads.	Livestock grazing would increase to 11,731 AUMs in the Alvord Desert WSA. Grazing use in the East Alvord WSA would increase to 808 AUMs.
Utility Corridor Routing	The proposed east-west power utility corridor would be rerouted around the WSAs adding 3 miles to the corridor length, with associated increased powerline construction and maintenance costs.	The proposed east-west power utility corridor would be rerouted around the WSAs adding 3 miles to the corridor length, with associated increased powerline construction and maintenance costs.	The proposed east-west utility corridor would be designated in the eastern portion of Alvord Desert WSA and the 500 kV powerline could be constructed.	The proposed utility corridor would be designated in the eastern portion of the Alvord Desert WSA and the 500 kV powerline would be constructed.
Recreation Use	Wilderness designation would result in a net reduction in the areas' overall recreation use level from less than 200 visitor days per year to less than 100 visitor days per year.	Wilderness designation would result in a reduction in the areas' overall recreation use from less than 200 visitor days per year to less than 100 visitor days per year.	The areas' current recreation use would remain at less than 200 visitor days per year.	Overall recreation use levels would remain at less than 200 visitor days per year.
Local Personal Income	Annual local personal income would decrease by approximately $1,600.	Annual local personal income increase by approximately $9,200.	Annual local personal income would increase by approximately $89,000.	Annual local personal income would increase by approximately $89,000.

Table 3. Classification of Energy and Mineral Potential, Alvord Desert WSA (OR-2-74) and East Alvord WSA (OR-2-73A)

Commodity	Area	Level of Potential	Level of Certainty
Metals (silver, copper, zinc)	Part of 2-74 (see Map 6)	M	B
	Remainder of area	L	B
Geothermal	Part of both WSAs (see Map 6)	H	D
	Remainder of area	M	B
Uranium/Thorium	Part of 2-74 (see Map 6)	M	B
	Part of 2-74 (see Map 6)	M	C
	Remainder of area	0	A
Beryllium	Part of 2-74 (see Map 6)	M	B
	Remainder of area	0	A
Sodium & Potassium	Part of 2-74 (see Map 6)	L	B
	Remainder of area	0	A
Coal	All of both WSAs	L	C
Oil/Gas	All of both WSAs	M	B
Tar Sands/Oil Shale	All of both WSAs	O	C
Limestone	All of both WSAs	O	C
Bentonite	Part of both WSAs (not shown on map)	L	C
	Remainder of area	O	B
Diatomite	Part of both WSAs (see Map 5)	M	B
	Part of both WSAs (not shown on map)	L	C
	Remainder of area	O	B
Zeolites	All of both WSAs	L	C
Rock Aggregate (Sand & Gravel)	All of both WSAs	H	D

Legend:

Level of Potential

O - No indication for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Moderate potential for accumulations of energy/mineral resource
H - High potential for accumulations of energy/mineral resource

Level of Certainty

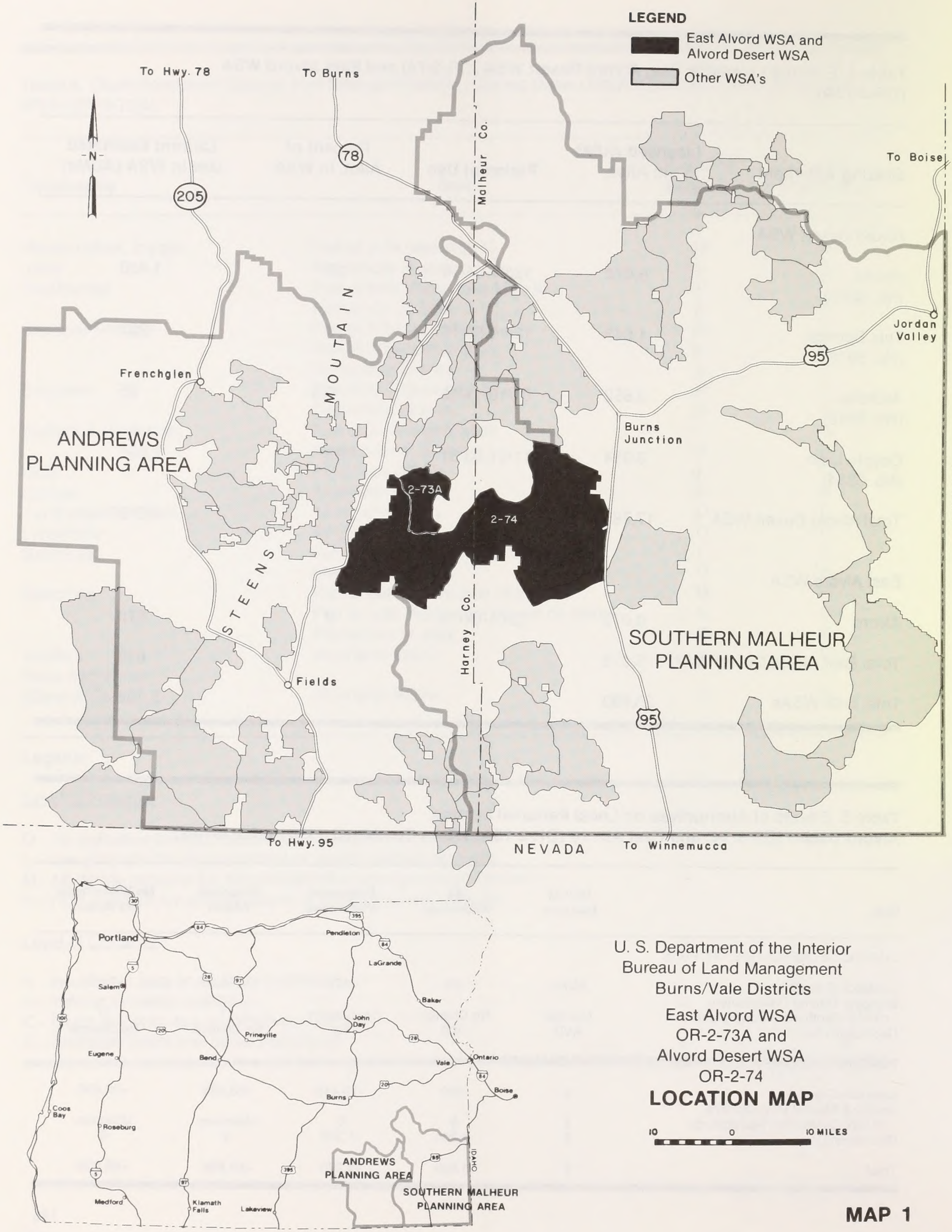
A - Insufficient data or no direct evidence
B - Indirect evidence available
C - Direct evidence but quantitatively minimal
D - Abundant direct and indirect evidence

Table 4. Existing Livestock Use, Alvord Desert WSA (OR-2-74) and East Alvord WSA (OR-2-73A)

Grazing Allotment	Licensed AUMs in Allot.	Period of Use	Percent of Allot. in WSA	Current Estimated Use in WSA (AUMs)
Alvord Desert WSA				
Alvord (No. 6012)	9,072	12/01-04/15	30	1,400
Tule Springs (No. 6018)	1,543	12/01-04/15	14	203
Andrews (No. 6019)	3,852	04/16-11/15	0.3	65
Coyote Lake (No. 0804)	3,314	11/01-03/31	86	2,850
Total Alvord Desert WSA	17,781			4,518
East Alvord WSA				
Alvord	9,072	12/01-04/16	9	618
Total East Alvord Desert WSA	9,072			618
Total both WSAs	26,853			5,136

Table 5. Effects of Alternatives on Local Personal Income, Alvord Desert (OR-2-74) and East Alvord (OR-2-73A) WSAs Combined (1981 price levels)

Item	Unit of Measure	All Wilderness	Enhanced Wilderness	Proposed Action	No Wilderness/ No Action
CHANGES IN RESOURCE OUTPUTS					
Livestock Grazing	AUMs	-30	+870	+7,403	+7,403
Energy & Mineral Development: 10-MW Geothermal Powerplants	Number	No Change	No Change	+1	+1
Recreation Use	RVD	-100	-100	No Change	No Change
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES					
Livestock Grazing	$	-360	+10,440	+88,836	+88,836
Energy & Mineral Development: 10-MW Geothermal Powerplants	$	0	0	Unknown	Unknown
Recreation Use	$	-1,200	-1,200	0	0
Total	$	-1,560	+9,240	+88,836	+88,836



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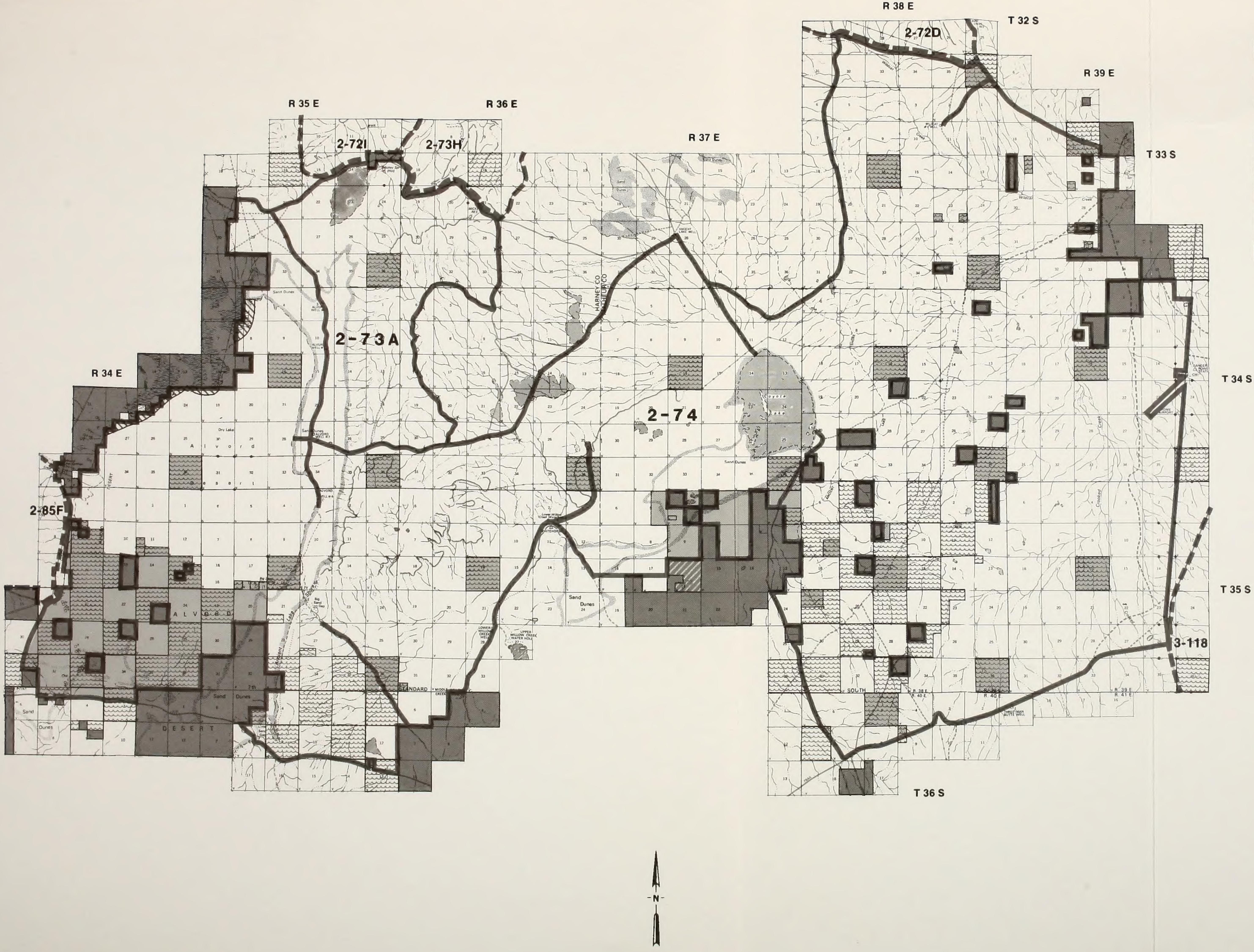
Burns/Vale Districts
East Alvord WSA
OR-2-73A and
Alvord Desert WSA
OR-2-74

LOCATION MAP

MAP 1



LEGEND

▩	BLM Land Studied Under Section 202 of FLPMA (Other BLM Land in WSA Studied Under Section 603 of FLPMA)
▬	Wilderness Study Area Boundary
▬ ▬	Boundary of Adjacent Wilderness Study Areas
☐	Bureau of Land Management
▨	State
■	Private
▤	BLM Surface-State or Private Subsurface (Split Estate)
▧	**Snowy Plover Habitat**

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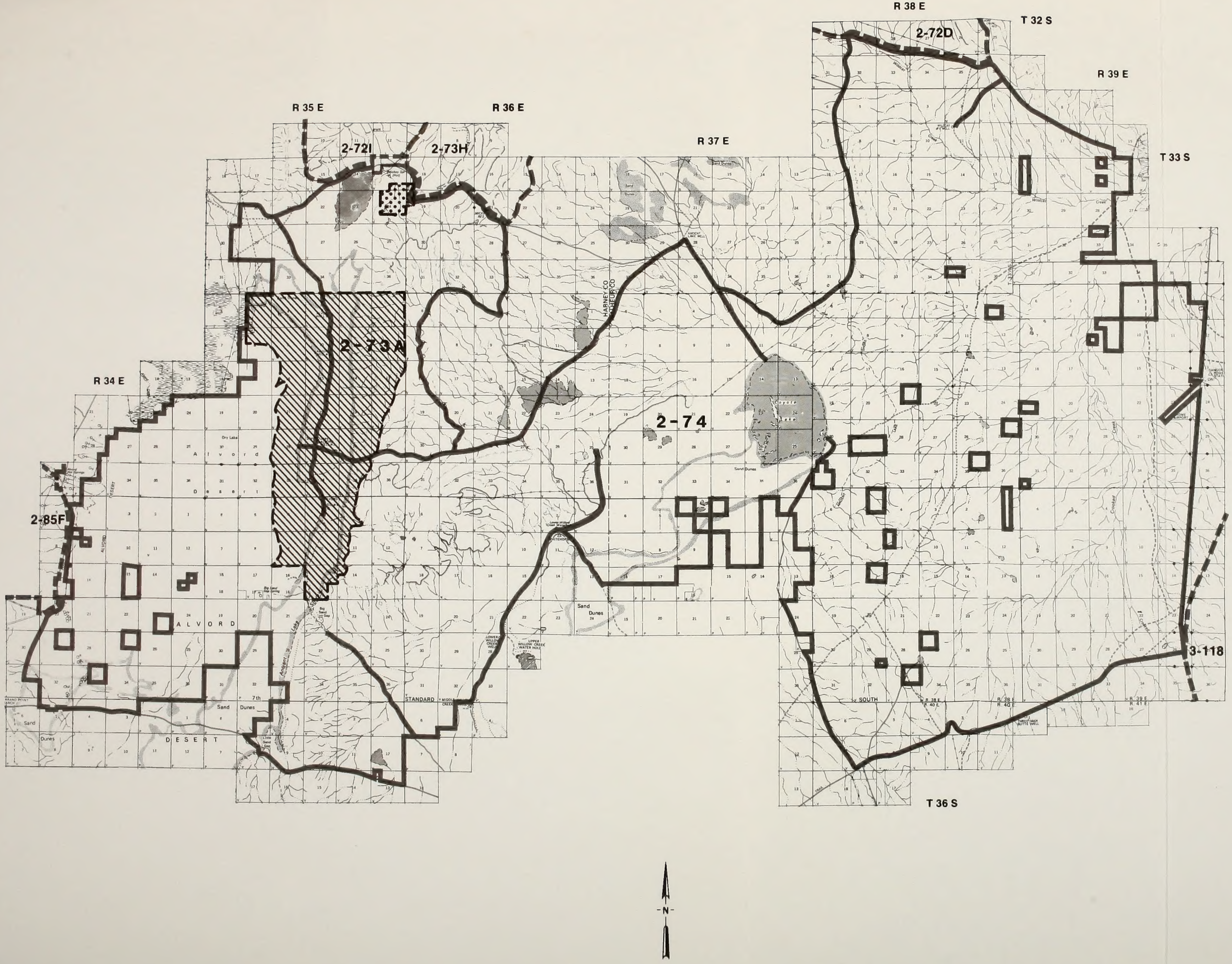
East Alvord WSA
OR-2-73A and
Alvord Desert WSA
OR-2-74

LAND OWNERSHIP

1 0 1 2 MILES

MAP 2



LEGEND

▬ Wilderness Study Area Boundary

‒ ‒ Boundary of Adjacent WSA's

▨ Alvord Desert ACEC

⁘ Mickey Basin RNA

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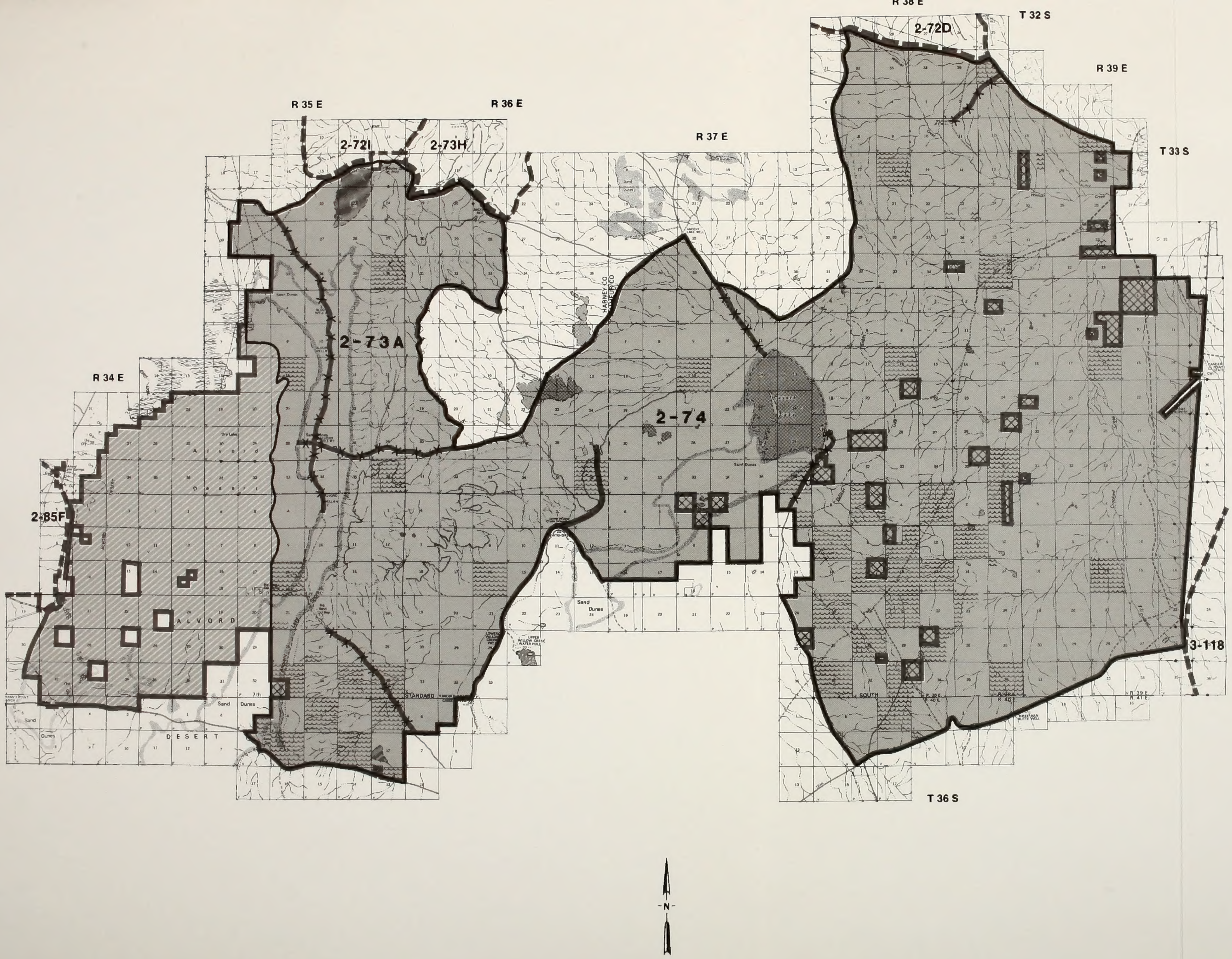
Burns/Vale Districts

East Alvord WSA
OR-2-73A and
Alvord Desert WSA
OR-2-74

AREA OF CRITICAL ENVIRONMENTAL CONCERN & RESEARCH NATURAL AREA

1 0 1 2 MILES

MAP 3



LEGEND

- ▬ Wilderness Study Area Boundary
- ▬ ▬ Boundary of Adjacent Wilderness Study Areas
- ▭ Recommended Suitable for Wilderness
- ▨ Recommended Non-suitable for Wilderness
- ▩ Non-Federal Land within Recommended Wilderness
- ☰ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness
- X—X Recommended Road Closure

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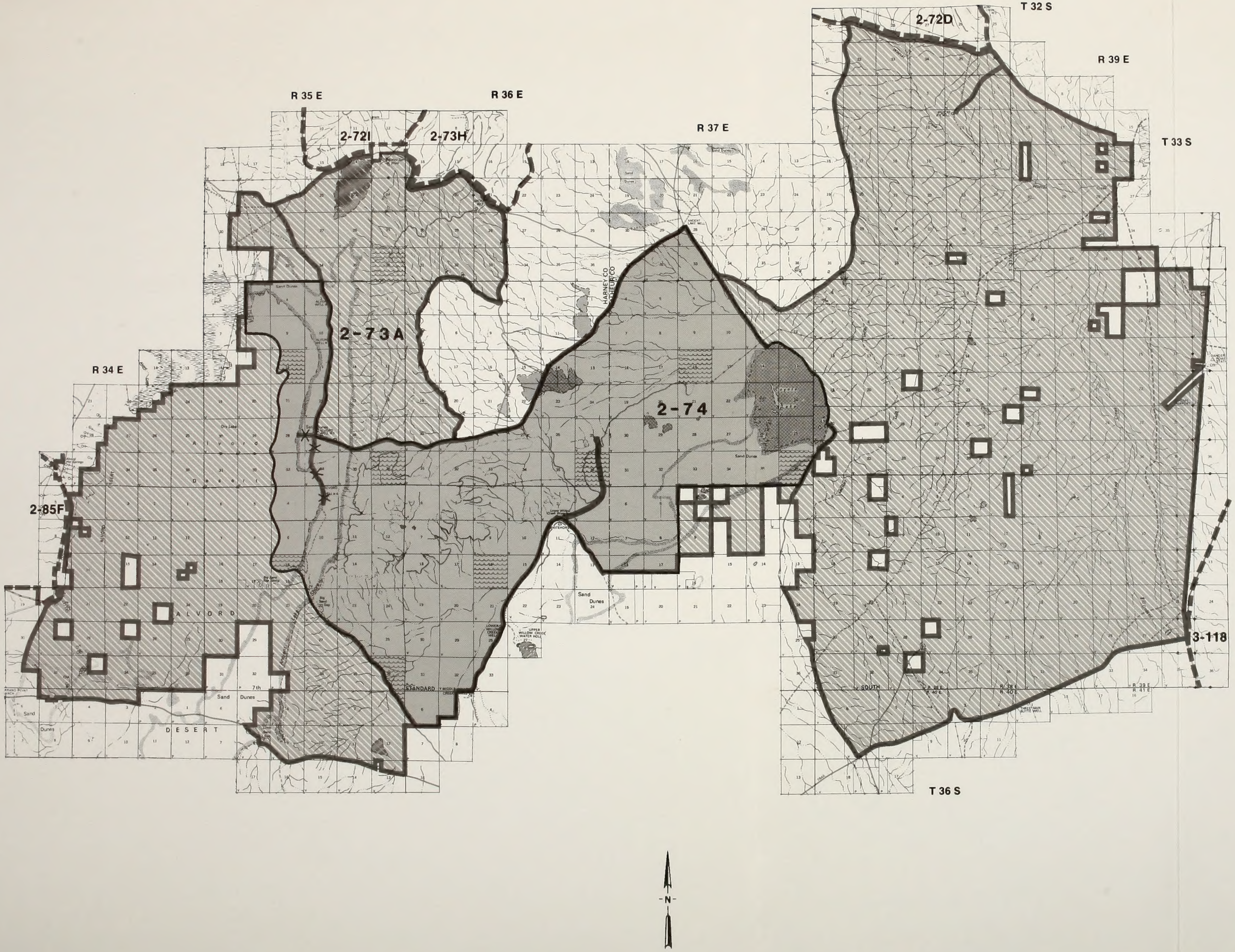
East Alvord WSA
OR-2-73A and
Alvord Desert WSA
OR-2-74

ENHANCED ALTERNATIVE

1 0 1 2 MILES

MAP 4



LEGEND

- ▬ Wilderness Study Area Boundary
- ╍ Boundary of Adjacent Wilderness Study Areas
- ▢ Recommended Suitable for Wilderness
- ▨ Recommended Non-suitable for Wilderness
- ▩ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness
- ✕—✕ Recommended Road Closure

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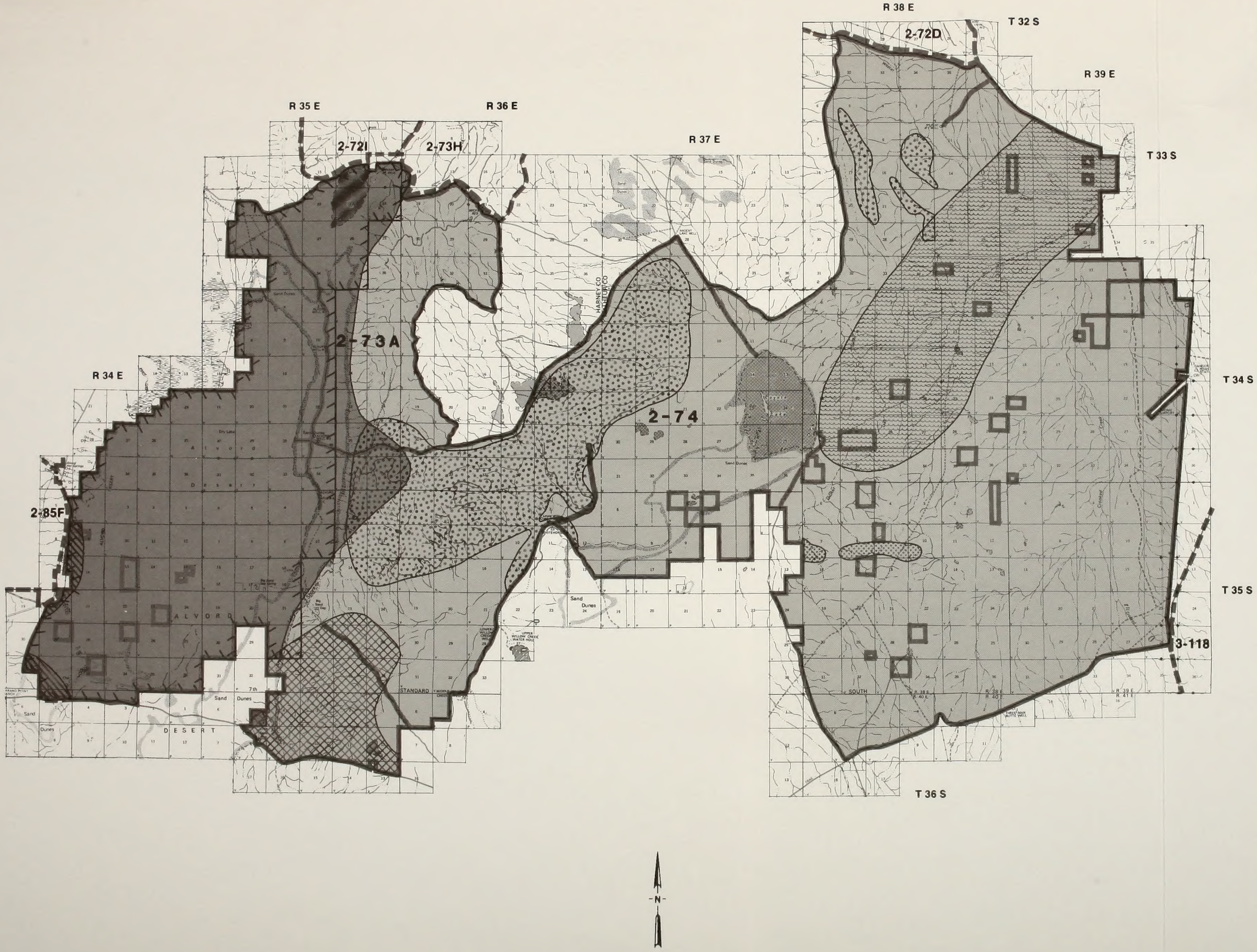
East Alvord WSA
OR-2-73A and
Alvord Desert WSA
OR-2-74

PROPOSED ACTION

1 0 1 2 MILES

MAP 5



- ▒ Moderate Potential (MB) for Geothermal Resources
- ■ High Potential (HD) for Geothermal Resources
- ░ Moderate Potential (MB) for Diatomite
- ▧ Moderate Potential (MB) for Copper and Silver
- ▩ Moderate Potential (MC) for Uranium and Silver
- ▤ Moderate Potential (MB) for Zinc and Silver
- ░ Moderate Potential (MB) for Uranium and Beryllium
- ☐ Portion of WSA within known Geothermal Resource Area

Entire WSA:
Moderate Potential
(MB) for Oil and Gas
High Potential
(HD) for Aggregates
(Mineral Material)

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Burns/Vale Districts

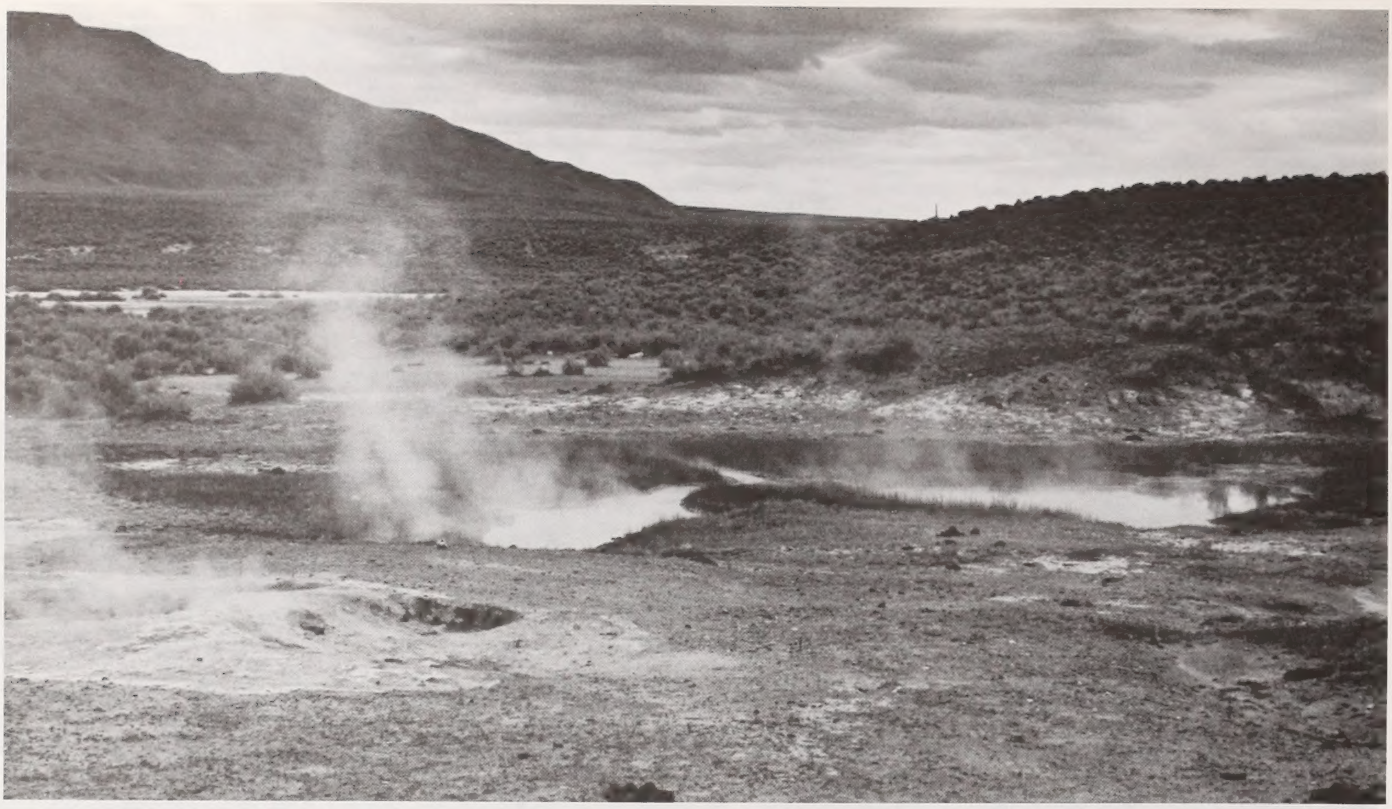
East Alvord WSA
OR-2-73A and
Alvord Desert WSA
OR-2-74

MODERATE OR HIGH POTENTIAL MINERAL OR ENERGY RESOURCES

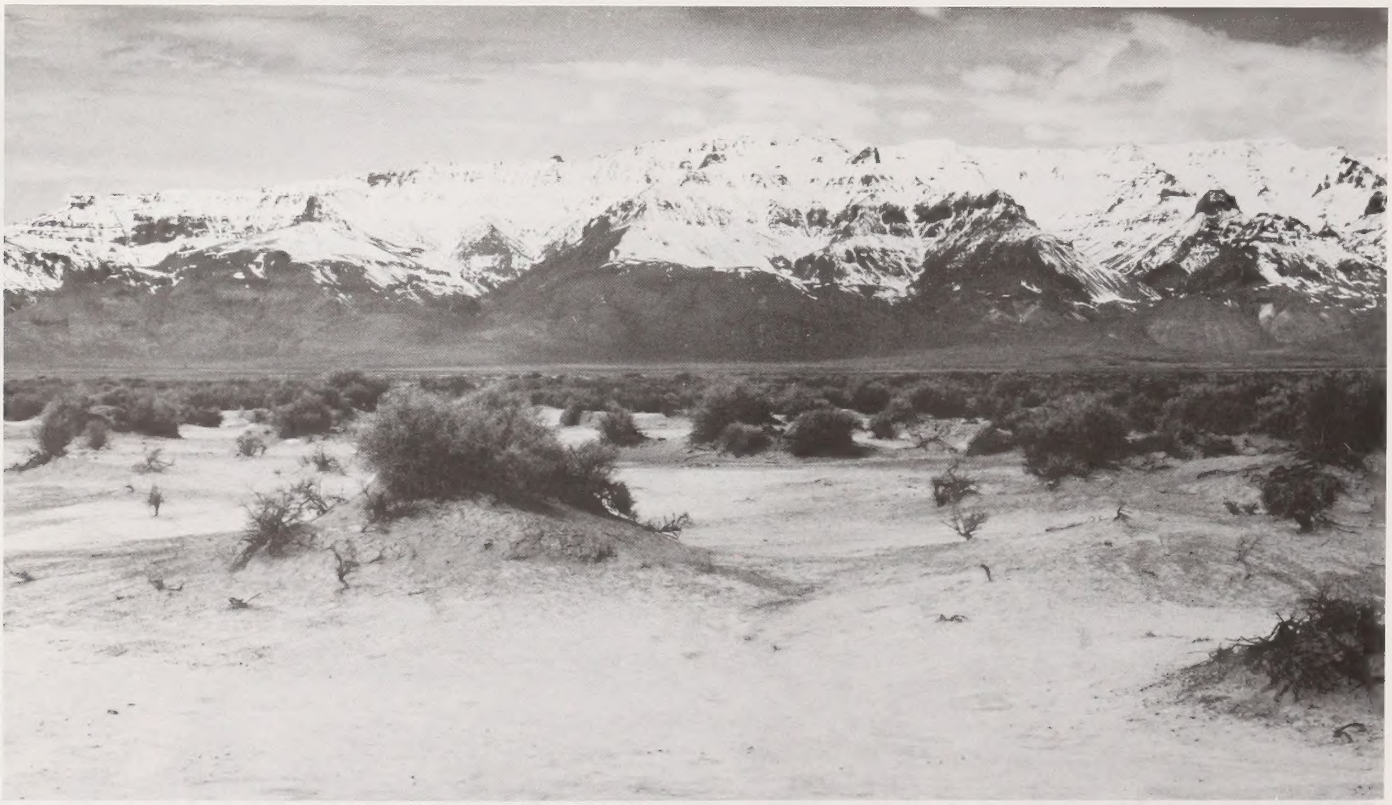
1 0 1 2 MILES

East Alvord WSA, OR-2-73A. The northern boundary area looking southeast at the ridgeline which runs through the central portion of the WSA. The foreground shows part of a basin in the northern portion of the area. The area is recommended suitable under the enhanced and nonsuitable under the proposed action alternative. April 1984.

East Alvord WSA, OR-2-73A. The central portion of the study area looking northwest . The area is recommended suitable under the enhanced and nonsuitable under the proposed action. Photograph shows the rounded rolling hills typical of this part of the WSA and the Steens Mountain ridgeline in the background. Septempber 1983.

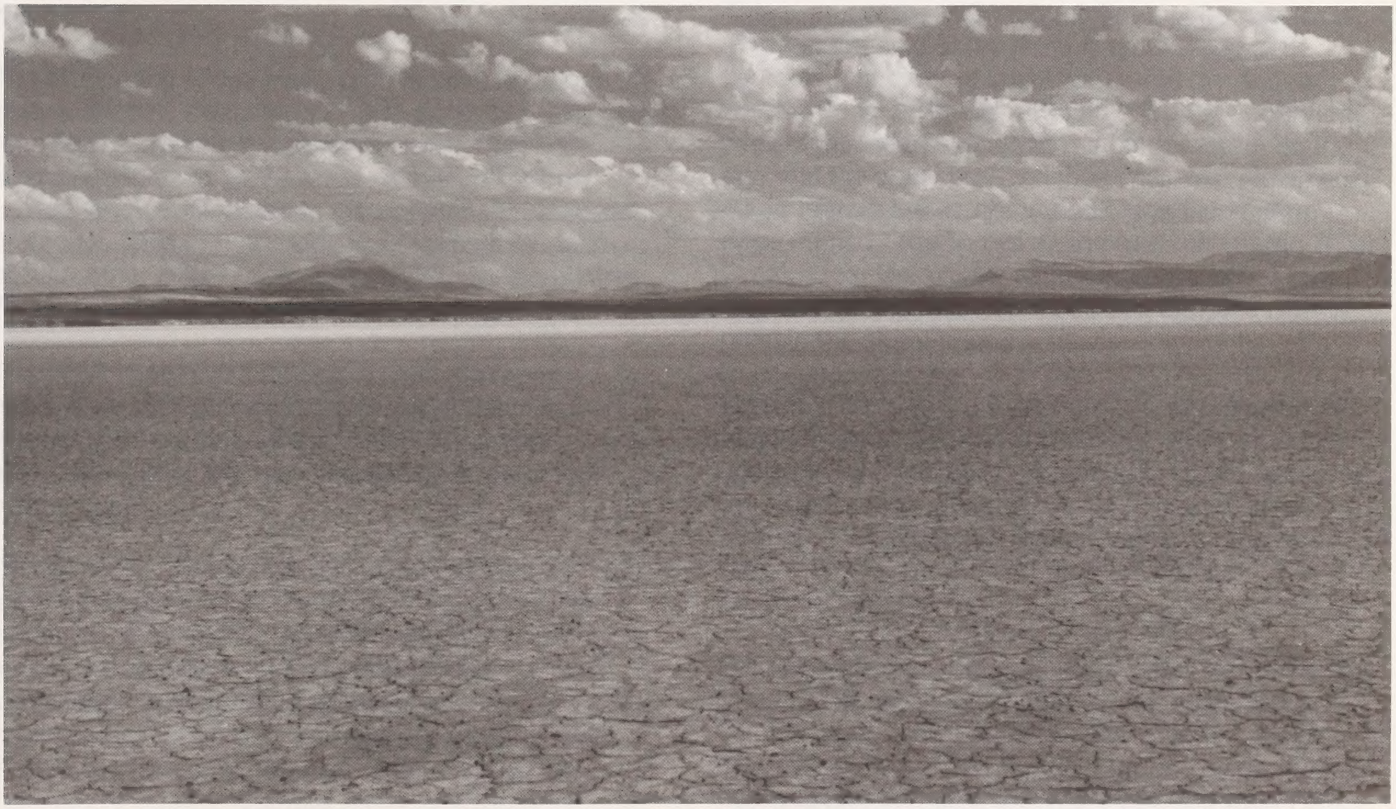


East Alvord WSA, OR-2-73A. Mickey Hot Springs in the northern portion of the study area looking south. The hot springs area is recommended suitable under the enhanced alternative and nonsuitable under the proposed action. Photograph shows one of several pools and steam vents of the hot springs (left foreground) and the main ridgeline in the WSA (background left). April 1984.



Alvord Desert WSA, OR-2-74. East of the Alvord Desert Playa looking west. The greasewood hummock portion of the Alvord Desert WSA is included in the area recommended suitable under the enhanced alternative and proposed action. Greasewood hummocks as seen in this view are dominant in this portion of the study area. As with most of the study area the primary view to the west is of Steens Mountain (the High Steens WSA, OR-2-85F). This shows the strong visual relationship between the two study areas. April 1984.

Alvord Desert WSA, OR-2-74. Along the ridgeline in the north central portion of the WSA looking southeast. This portion of the WSA is recommended suitable under the enhanced and proposed action alternatives. A steep west-facing eacarpment rises above the eastern side of the Alvord Basin and is the highest point in the study area. April 1984.



Alvord Desert WSA, OR-2-74. The northwest portion of the Coyote Lake lakebed looking south. The Trout Creek Mountains are on the horizon. Coyote Lake is recommended suitable under the enhanced and proposed action alternative. September 1983.

[illegible]

[illegible]

Appendix to the Wilderness Environmental Impact Statement for Oregon

Mahogany Ridge Wilderness Study Area (OR-2-77)

1. Introduction

General Description of the Study Area

The Mahogany Ridge Wilderness Study Area (WSA) is located 102 miles southeast of Burns (12 miles southeast of Fields) in Harney County (see Map 1). The Whitehorse Ranch county road, which runs between the Fields-Denio county road and U.S. Highway 95, lies 0.5 mile to the north of the WSA. Nevada State Highway 140 is 27 miles to the southwest.

The Mahogany Ridge study area is somewhat rectangularly shaped, containing 27,940 acres of public land (see Map 2). Within the study area are 19 private inholdings totaling 1,520 acres. Almost all of the private lands are located in the bottoms of the major drainages which run through the center of the WSA, or near other water sources. The WSA also contains 730 acres of split-estate lands.

The WSA is about 12 miles long and averages 4 miles in width, although it narrows to 2 miles in the center. The boundary of the area is formed by a combination of low standard BLM dirt roads and private land.

On the north, a "finger" of private land enters the WSA for 2 miles along Trout Creek. Six dead-end roads totaling 13.5 miles also penetrate the WSA forming part of the boundary. In the northeast, one of these roads leads to an 80-acre parcel of private land. This parcel is also technically part of the boundary even though it is essentially surrounded by public land.

The Mahogany Ridge study area lies within the Trout Creek Mountain Range in southeastern Oregon. It is in the western edge of the mountains near the Nevada border. This part of the Trout Creek Mountains is characterized by a large flat-topped plateau which gradually slopes to the north and west. The plateau is deeply gouged by three drainages which flow to the north and northwest. These three drainages and the large ridges which separate them are the major physical features of the Mahogany Ridge WSA.

The largest of the three drainages is Big Trout Creek Canyon. Flowing from south to north, Big Trout Creek runs the entire length of the study area, nearly dividing the WSA in half. The stream has cut a large canyon which reaches a depth of 1,600 feet near the center of the study area.

To the west of Big Trout Creek is Mahogany Ridge. This is one of the WSA's large flat-topped ridgelines. The eastern side of the ridge is quite steep and contains a number of small spring-fed drainages which flow into Big Trout Creek. It is to the north and west of this ridgeline, along the northwestern boundary, that the study area reaches its lowest elevation of 4,640 feet. In the southern end of the study area, a ridge named "The V" lies on the east side of Big Trout Creek. Near the WSA's southern boundary, "The V" ridge reaches an elevation of 8,192 feet, the highest point in the study area.

East of "The V" is the East Fork of Trout Creek. This major drainage originates within the study area and flows over 5 miles before it joins Big Trout Creek near the center of the WSA. The East Fork also flows through a large canyon which reaches its maximum depth of almost 1,300 feet near the confluence with Big Trout Creek.

Paralleling the East Fork and the lower reaches of Big Trout Creek is the study area's third major ridge, Center Ridge. This ridgeline primarily divides Big Trout Creek from Little Trout Creek, which drains the northeastern corner of the WSA. Like the East Fork, Little Trout Creek also originates within the study area. Little Trout Creek flows through the smallest canyon of the three drainages, which reaches a maximum depth of 740 feet.

There is a variety of vegetation within the Mahogany Ridge WSA. Although the dominant species in the study area is big sagebrush with a perennial bunchgrass understory, each of the three major drainages includes a variety of riparian species. Other prevalent species include aspen at the higher elevations, and mountain mahogany along the steeper slopes of the ridges.

Interrelationships

The Mahogany Ridge WSA is adjacent to two other WSAs to the east and south: Disaster Peak (OR-3-153) and Willow Creek (OR-3-152). They are separated from the Mahogany Ridge study area by a BLM road. The dirt road is primarily maintained by BLM and used by BLM personnel, livestock operators, private landowners and recreationists (mostly hunters in the fall).

The U.S. Soil Conservation Service has a snow survey marker, located within the study area, which is checked periodically by aircraft during the winter to determine snow depths. (Snow surveys provide information on snow moisture content for water supply forecasts.) Snow measurements by aircraft would be allowed to continue, as an established practice, after wilderness designation. Any other means of snow measurement or maintenance of snow survey markers would have to be by primitive means, such as by horseback or on foot. (Impacts on snow measurement surveys are not discussed further in this appendix.)

The proposed action for this WSA conforms with Oregon Department of Fish and Wildlife's (ODFW's) management objectives for game and nongame wildlife species. The WSA is located within the 4,882-square-mile Whitehorse Wildlife Management Unit (WMU) which has an objective to maintain a herd of 11,000 deer. However, no management objectives have been set for antelope. The Trout Creek Mountain portion of the Whitehorse WMU has been managed by ODFW as a limited entry hunting area since 1979.

Deer herd composition counts are conducted by low level aerial flights during the winter and spring and would be allowed to continue as an established practice after wilderness designation.

The objective for nongame wildlife is to maintain populations of naturally-occurring species at self-sustaining levels.

The U.S. Department of Agriculture (USDA) conducts a predator-control program along the northern portion of the WSA by aerially shooting coyotes to reduce predator damage to livestock.

Harney County has not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study and EIS planning, scoping and public review process. These issues concern both the effects of wilderness designation on existing and potential land uses or resources in the WSA, as well as the effects of existing and potential land uses or resources on wilderness values. Land uses or resources raised as issues specifically for this WSA include:

- impact on wilderness values, particularly the amount and location of private land in the area,
- impact on potential for developing geothermal or other mineral resources within the area,
- impact on mule deer, sage grouse, and nongame wildlife populations,
- impact on livestock grazing use levels and management,
- impact on recreation use levels, and
- impact on economic value of existing and projected resource outputs and local personal income derived from them.

The following topics were also considered, but were not analyzed for this WSA because their environmental significance or concern was not major to the decision process.

impact of projected energy development of existing claims on wilderness and other resource values: such actions are not BLM actions nor are they a function of the alternatives.

2. Description of Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on currentconditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made.

The following alternatives are analyzed:

- all wilderness
- enhanced wilderness
- no wilderness/no action (proposed action)

The enhanced alternative does not analyze combining this study area with either of the two adjacent WSAs by closing the road between them. This road is necessary for both public access (to private land for livestock management and hunting) and BLM use and closing it would not be feasible.

A partial alternative is not analyzed because there are no reasonable opportunities to resolve resource conflicts by reducing the size of the WSA and still retain necessary wilderness qualities.

All Wilderness

This alternative would recommend all 27,940 acres of public land suitable as wilderness (see Map 2). For purposes of analysis, it is assumed that private lands and the mineral estate of the split-estate lands would not be acquired. The six dead-end roads which enter the area would remain open, as would the low standard, dirt roads which form portions of the WSA boundary.

Energy and Mineral Development Actions

Wilderness designation would close 27,210 acres of public land within the WSA to all forms of appropriation under the mining and mineral leasing laws. Mineral development is not expected, but 1,520 acres of private lands in 19 parcels, as well as 730 acres of split-estate lands scattered throughout the WSA, would be open to mineral exploration and development.

Due to the lack of direct geological evidence, no confirmed petroleum bearing formations and the absence of oil and gas leases, only casual surface exploration with no development is projected for this resource. Also, geothermal development is not expected, for although there is some direct evidence for the presence of geothermal resources, it is quantitatively minimal and there are no geothermal leases in the WSA.

Direct and indirect evidence indicates a moderate potential for the occurrence of mercury and diatomite. It is expected that exploration would occur on some of the eight existing diatomite claims. Exploration would disturb six acres for core drilling and trenching at 25 locations in the northern tip of the designated wilderness. As the northern tip has an adequate network of roads, trails and ways, it is expected that less than 2 miles of cross-country travel or less than two acres would be disturbed by transporting exploration equipment. A total of eight acres would be disturbed, before reclamation, by exploration activities.

If exploration proves the existence of an economic ore body, the existing eight diatomite claims would be found valid at the time of wilderness designation. The diatomite would be mined over a period of 20 years within one 150-acre open-pit mine. All 150 acres would not be disturbed at one time as lands would be reclaimed as the work progressed. Approximately 10 acres would be continuously disturbed. Two miles of new haul roads and associated powerlines within the designated wilderness area would disturb eight acres. A processing mill would be located on public lands outside of the designated wilderness area. Eighteen acres would be disturbed at a given time under this scenario, while a total of 158 acres would be disturbed over the life of the mine.

No mineral development is expected on the private land or split-estate lands within the boundary of the WSA due to the small size and lack of potential on the scattered parcels.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. No wildlife projects are proposed.

Annual predator control by the USDA would be allowed, but under wilderness management only those predator control methods which can be directed at eliminating individual problem animals would be permitted.

Livestock Management Actions

A reduction in livestock grazing use of 180 AUMs is projected, based on preliminary studies and the results of ongoing monitoring. A reduction would be necessary to offset a shortage in available forage in the Trout Creek Mountain allotment. In the absence of new range improvement projects designed to increase available forage, licensed livestock use would be reduced to 5,240 AUMs within the WSA (see Table 4) with grazing occurring during spring and summer from April 15 to September 30.

Vehicle use for livestock management and maintenance activities on 13.5 miles of ways would be precluded. Mechanized heavy equipment would be used to maintain 18 reservoirs and nine springs on the average of once every 10 years. Management of livestock and routine maintenance of eight fences totaling 11 miles and the springs would be conducted mainly with horses and pack animals.

Recreation Management Actions

The entire 27,940 acres would be closed to motorized vehicle use, including 13.5 miles of ways. Recreation use is estimated to be less than 800 visitor days per year. Most of this use is associated with vehicle access utilizing the eastern boundary road between this WSA, Willow Creek WSA (3-152) and Disaster Peak WSA (3-153) as well as the dead-end roads into the WSA's interior.

Enhanced Wilderness

Under the enhanced wilderness alternative, 28,750 acres of public land would be recommended as suitable for wilderness (see Map 3). This includes an additional 810 acres of public land located on the northern and western sides of the WSA, which would also be recommended suitable under this alternative. An attempt would be made to acquire 4,590 acres of private land and the mineral estate of 730 acres of split-estate land. These parcels and mineral estate could be acquired through purchase or exchange with willing owners.

Assuming addition of public land outside the WSA and acquisition of private land, the total area recommended suitable under this alternative would be 33,340 acres.

The acquisition of private lands along the boundary would expand the boundary on the southern and western sides of the WSA to conform with the Trout Creek Mountain Road. On the northeast, the boundary road would follow a main road on the north side of Little Trout Creek instead of the minor road which currently bounds the area. The six dead-end roads which enter the area would also be closed.

Energy and Mineral Development Actions

Enhanced wilderness designation would withdraw 28,020 acres within the WSA from all forms of mineral appropriation under the mining and mineral leasing laws. If acquisition is successful, an additional 4,590 acres of private land and 730 acres of split-estate land would also be closed to mineral entry.

Due to the lack of direct geological evidence, no confirmed petroleum bearing formations and the absence of oil and gas leases, only casual surface exploration with no development is projected for this resource. Also, geothermal development is not expected, for although there is some direct evidence for the presence of geothermal resource, it is quantitatively minimal and there are no geothermal leases in the WSA.

Direct and indirect evidence indicates a moderate potential for the occurrence of mercury and diatomite. It is expected that exploration would occur on some of the eight existing diatomite claims, and exploration would occur at 25 locations. This exploration would disturb six acres of land for core drilling and trenching and would occur in the northern tip of the designated wilderness. As the northern tip has an adequate network of roads, ways, and trails, it is expected that less than 2 miles of cross-country travel would be utilized to transport exploration equipment and would disturb less than two surface acres. A total of eight acres would be disturbed before reclamation by exploration activities.

If exploration proves the existence of an economical ore body, diatomite would be mined over a period of 20 years within one 150-acre open-pit mine. All 150 acres would not be disturbed at one time, as lands could be reclaimed as the work progressed. Approximately 10 acres would continuously be disturbed. Two miles of new haul roads and associated powerlines would disturb eight acres. A processing mill would be on public lands located outside of the wilderness area. A total of 158 acres would be disturbed under this scenario before reclamation.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

Annual predator control by the USDA would be allowed, but under wilderness management only those predator-control methods which can be directed at eliminating individual problem animals would be permitted.

Livestock Management Actions

A reduction in livestock grazing use of 180 AUMs is projected based on preliminary studies and the results of ongoing monitoring. A reduction would be necessary to offset a shortage in available forage in the Trout Creek Mountain allotment. In the absence of new range improvement projects designed to increase available forage, licensed livestock use would be reduced to 5,240 AUMs within the WSA (see Table 4) with grazing occurring during spring and summer from April 15 to September 30.

Vehicle use for livestock management and maintenance activities on 13.5 miles of ways and 13.5 miles of roads would be precluded. Mechanized heavy equipment would be used to maintain 18 reservoirs and nine springs on the average of once every 10 years. Livestock management and routine maintenance of eight fences totaling 11 miles and the nine springs would be conducted mainly with horses and pack animals.

Recreation Management Actions

Motorized recreation use would be precluded on 28,750 acres including 13.5 miles of ways and 13.5 miles of roads. Recreational use is estimated to be less than 800 visitor days per year. Most use is associated with vehicle access utilizing the eastern boundary road between this WSA and adjacent WSAs, as well as the interior, dead-end roads.

No Wilderness/No Action (Proposed Action)

The no wilderness/no action alternative would recommend the entire WSA nonsuitable as wilderness. It represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

The entire 27,940-acre WSA would be open to mineral entry and leasing.

Due to the lack of direct geological evidence, no confirmed petroleum-bearing formations and the absence of oil and gas leases, only casual surface exploration with no development is projected for this resource. Also, geothermal development is not expected, for although there is some direct evidence for the presence of geothermal resources, it is quantitatively minimal and there are no geothermal leases in the WSA.

Direct and indirect evidence indicates a moderate potential for the occurrence of mercury and diatomite. Because of the moderate potential for both these minerals, it is projected that exploration would occur at 50 locations. This exploration would disturb 12 acres of land for core drilling and trenching and would occur in the northern tip of the WSA for diatomite and in the central portion of the WSA for mercury. As the wilderness study area has an adequate network of roads, ways, and trails, it is expected that less than 3 miles of cross-country travel would be utilized, and less than three acres would be disturbed by transporting exploration equipment. A total of 15 acres of surface acreage would be disturbed before reclamation by exploration activities.

The diatomite would be mined over a period of 20 years within one 150-acre open-pit mine. All 150 acres would not be disturbed at one time as lands could be reclaimed as the work progressed. Approximately 10 acres would continuously be disturbed. Two miles of new haul roads and associated powerlines would disturb an additional eight acres for a total of 158 acres of disturbance. A processing mill would be on public lands outside of the WSA.

An open-pit mercury mine would be located in the central portion of the WSA. The mine would disturb 75 acres. Two miles of new haul roads and associated powerlines within the WSA would disturb 9 acres and improvement of existing roads would utilize an additional acre. A total of 85 acres would be disturbed by mining activities.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

Livestock Management Actions

Licensed livestock use would remain at 5,420 AUMs within the WSA, with the season of use occurring from April 15 to September 30.

Vehicle use would continue on all ways and roads for livestock monitoring, management and maintenance of rangeland developments. Use of mechanized heavy equipment would be required approximately once every 10 years to maintain 11 spring developments and 18 reservoirs. Two springs, identified for grazing management in the Andrews Rangeland Program Summary, would be developed to sustain livestock use at the present level.

Recreation Management Actions

Vehicle-oriented recreation would continue on 13.5 miles of roads and 13.5 miles of ways.

Recreation use is estimated to be less than 800 visitor days per year. Most use is associated with vehicle access utilizing the eastern boundary road between this WSA and adjacent WSAs, as well as the interior, dead-end roads.

Summary

Table 1 summarizes the projected management actions under each alternative.

Table 2 summarizes the environmental consequences of each alternative.

3. Affected Environment

This section discusses only those activities or resources which influence the character of the study area, or which may be affected by the alternatives.

Wilderness Values

Naturalness

Mahogany Ridge WSA appears to be in a relatively natural condition. Forty-nine unnatural features influence approximately eight percent of the WSA: 18 reservoirs, 9 spring developments, 10 ways totaling 13.5 miles, 8 fences totaling 11 miles, one 350-acre crested wheatgrass seeding, the ruins of an old cabin, one corral and an area with several old sheds. The developments are scattered throughout the study area except in the vicinity of Government Corrals where several are clustered.

Water developments influence about four percent of the WSA. Ten of the reservoirs and eight of the spring developments influence very small areas. The remaining water developments have an influence on larger areas because of their location in a valley where they can be viewed from higher surrounding terrain.

The area around Government Corrals contains several old buildings, a large corral, a reservoir, a developed spring, several fences and a way. Collectively, these developments influence less than one percent of the study area.

In the rest of the WSA, developments are small, scattered and screened by the topography. The vehicle ways are visible only in their immediate vicinity. The crested wheatgrass seeding is overgrown with sagebrush and is not very noticeable.

Outside sights and sounds are not significant. The primary source of outside sights and sounds is the boundary roads. Additionally, ranching activities and the agricultural field near the north end of the WSA have a slight influence on the study area. These features do not detract from the wilderness character of the study area.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

Opportunities for solitude in the Mahogany Ridge WSA are outstanding. These opportunities are enhanced by the study area's size and the diverse topography and vegetation.

The major canyons of Trout Creek and its tributaries, plus the plateaus and ridges between the drainages, as well as the rolling hills in the northwest, all provide topographic screening. Groves of aspen, patches of mountain mahogany and expanses of big sagebrush provide vegetative screening to enhance solitude mainly in the canyons and at locations scattered along the ridge top. The rest of the WSA has no vegetative screening.

The area provides outstanding opportunities for primitive recreation, including day hiking, backpacking, camping, hunting and sightseeing.

Primary attractions for day hiking include Big Trout Creek, Little Trout Creek and the East Fork of Trout Creek. The canyons of these creeks are very appealing with aspen groves, mountain mahogany patches and riparian vegetation. Additional attractions are Pole Canyon and Cover Canyon located on the east side of Mahogany Ridge. These are intermittent drainages which flow into Big Trout Creek and contain aspen, mountain mahogany and other shrubs. Three large, flat-topped ridges, which separate the major drainages in the WSA, provide excellent hiking. The terrain is diverse and the view is striking.

Backpackers would utilize much the same areas as day hikers. There are adequate water sources and plenty of level camping spots. The vegetation throughout the study area offers shelter and seclusion.

Game species that can be hunted within the study area include mule deer, antelope and upland game birds. Opportunities for deer hunting are very good with excellent populations throughout the WSA. Opportunities for antelope hunting are good with above-average populations and moderate ease of hunter movement.

Opportunities for chukar hunting are best in the foothills and drainages of the study area. There are good populations of sage grouse in the WSA, but hunting them is only allowed by the ODFW on a periodic basis when numbers are high.

Big Trout Creek, Little Trout Creek and East Fork Trout Creek all provide good fishing opportunities for hybrid cutthroat/rainbow trout.

Opportunities for sightseeing are outstanding in the Mahogany Ridge WSA. The diversity in terrain, from the broad mahogany-covered plateaus to the aspen groves and riparian habitat of the deep creek canyons, creates many interesting views and viewpoints. Broad vistas with views of Steens Mountain, Pueblo Mountains and the mountain ranges of northern Nevada are available from various high points in the WSA.

Special Features

Features in the Mahogany Ridge WSA, which add to the value of this area as wilderness, include vegetation and wildlife.

Two plant species of special interest, *Melica stricta* and *Allium bisceptrum*, are found in the WSA. (They are discussed further in the Vegetation section.)

The area contains crucial deer winter range and three sage grouse strutting grounds. Crucial deer winter range is found on 800 acres around the Chalk Hills area in the northwest part of the WSA (see Map 2). Three sage grouse strutting grounds are located in the northeastern edge of the WSA, where sage grouse conduct an extensive courtship dance prior to mating. The same areas are often used year after year and the birds usually nest within a 2-mile radius of these areas. Sage grouse, although hunted when the ODFW determines populations are high in the area, is a candidate for Federal listing as threatened or endangered.

Diversity in the National Wilderness Preservation System (NWPS)

According to the Bailey-Kuchler system of classifying ecosystems, the study area is in the Intermountain Sagebrush Province, and the potential natural vegetation community is sagebrush steppe.

There are seven ecosystems, identified in the Basin and Range section of the Oregon Natural Heritage Plan, which occur in this WSA. The sagebrush communities are big sagebrush/Idaho fescue, low sagebrush/Idaho fescue, low sagebrush/Sandberg's bluegrass, and big sagebrush/bluebunch wheatgrass. The other communities are aspen grove and mountain mahogany plus the bitterbrush-sagebrush/snowberry which occurs on Trout Creek Mountains.

The study area is within five hours' driving time of two standard metropolitan statistical areas with populations over 100,000: Boise, Idaho and Reno, Nevada.

Energy and Mineral Development

The energy and mineral resources of the Mahogany Ridge WSA were evaluated by interpreting existing literature, reviewing mining and mineral leasing records, correlating rock units in the WSA with similar environments in areas known to contain mineral resources, and by evaluating results of a geochemical sampling program conducted by the BLM. Technical details of the evaluation are in a mineral resources assessment report on Pueblo Valley Geological Resource Area (GRA), Harney County, Oregon, prepared by TERRADATA (a consulting firm under contract with BLM).

Surface rocks in the WSA are Tertiary volcanic rocks consisting of basalt, andesite, and rhyolite flows, tuffs and tuffaceous sedimentary rocks with interlayers of ashy diatomite which represent lacustrine (lake) deposits.

The entire WSA is rated moderately favorable for the occurrence of metals. It is within the Pueblo Valley geologic resource area which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level). A description of the rating system is provided in the Statewide EIS volume.

Table 3 shows the energy and mineral potential classifications in the study area. Map 4 shows where energy and mineral resources have moderate or high potential for occurrence in the WSA.

Energy Resources

The northern part of this WSA is considered to have moderate potential for the occurrence of geothermal resources. There were no oil and gas or geothermal leases in the WSA, as of October 16, 1987.

Mineral Resources

The entire WSA is rated moderately favorable for the occurrence of metals because the volcanic rocks present here belong to the same geologic formation that hosts occurrences of mercury, copper and gold in the Alvord Peak WSA (OR-2-83). Mercury and copper are strategic and critical minerals, but there are no known deposits of these minerals in the WSA.

The industrial mineral diatomite occurs in a sedimentary rock formation which extends into the northern part of the WSA. There is a diatomite mining prospect less than 3 miles northeast of the WSA. As of October 16, 1987, a total of eight mining claims, associated with diatomite, were located in the WSA.

Vegetation

On the rolling hills and slopes of the lower elevations is a big sagebrush/bunchgrass community. Estimated successional stage is early to mid-seral. The potential natural community species are big sagebrush, bluebunch wheatgrass and Idaho fescue.

At higher elevations, the rolling hills, with little or no slope, are dominated by big sagebrush. The estimated successional stage is mid-seral. The potential natural community species are Idaho fescue, western needlegrass and big sagebrush.

The steeper mountain slopes are dominated by big sagebrush and mountain snowberry. The estimated successional stage is mid to late seral. The potential natural community species on the north slopes are Idaho fescue, Canby bluegrass, Cusick bluegrass, big sagebrush and mountain snowberry. The potential natural community species on the south slopes are Great Basin wildrye, big sagebrush and mountain snowberry.

A low sagebrush/bunchgrass community occurs on slopes where the soils are shallow and on exposed ridgetops. The estimated successional stage is mid-seral with the steeper slopes approaching late seral. Species expected at the community's potential on the north slopes and ridge tops are Idaho fescue, low sagebrush and Sandberg's bluegrass.

On the south slopes, the potential natural community species are bluebunch wheatgrass and low sagebrush. Curlleaf mountain mahogany dominates rocky flat tops and steep rock outcrops. Common understory species are needlegrasses, oniongrass, sagebrush, Sandberg's bluegrass, Idaho fescue and squirreltail. The estimated successional stage is mid- to late seral. The potential natural community species are curlleaf mountain mahogany, needlegrasses and Idaho fescue.

Aspen groves and meadows are interspersed in the mountain big sagebrush communities across the mountain slopes and ridge tops. The aspen groves have an understory of bluegrasses, mountain brome, and shade-tolerant forbs. The vegetation in the meadows is bluegrasses, sedges, rushes, and forbs. The estimated successional stage of both communities is mid-seral. The potential natural community species on the meadows are bluegrasses and sedges, and in the aspen groves are aspen and the associated shrubs. An inventory of meadows on public land in the WSA found 68 percent of the meadows in poor condition and 32 percent in fair condition.

The riparian community is a significant vegetative community found along three major streams. The major species include aspen, alder, willow, rose, dogwood, sagebrush and many species of grasses, sedges and forbs. The major potential natural community species are aspen, willow, alder, grasses and forbs. Riparian inventory on public land in the WSA found 84 percent to be in poor condition, 13 percent in fair condition and 3 percent in good condition.

Two plant species of special interest (mentioned in the Special Features section) have been discovered in the study area: *Allium bisceptrum* (two-stemmed onion), and *Melica stricta* (nodding melic). Both plants are on List 2 of the Oregon Natural Heritage Plan's "Rare, Threatened, and Endangered Plants and Animals of Oregon."

In summary, the vegetative composition and ecological status in the WSA is currently in mid-seral stage overall, and the trend is downward, particularly in areas subjected to heavy or severe livestock use.

Wildlife

The WSA contains a wide variety of wildlife species due to the diverse habitat types. Mule deer summer on mid- and upper-elevation ranges on the Trout Creek Mountains and winter at low elevation ranges on the north end of the WSA and outside of the WSA. The upper elevations of Trout Creek Mountains have a good interspersion of water, cover and forage. ODFW estimates that the WSA supports 1,000 summering deer, 400 winter deer, and 100 summering antelope.

An estimated two percent of the deer summer range and one percent of the deer winter range for the Trout Creek Mountain deer herd is found in the WSA. However, an estimated four percent of the deer summering and nine percent of the deer wintering in the Whitehorse Management Unit are found in the WSA.

Pronghorn antelope summer on the low sagebrush covered ridges at mid to high elevations. An estimated 10 percent of the antelope summer range in Whitehorse Management Unit occurs in the WSA.

Nongame mammals include coyote, black-tailed jackrabbit, mountain cottontail, northern pocket gopher, beaver and Belding's ground squirrel and many other species.

Sage grouse are abundant during the summer in the low sagebrush and big sagebrush at mid- and high-elevation ranges. Wintering areas have not been located. Three sage grouse strutting grounds have been located in the northeastern edge of the study area. These birds are candidates for Federal listing as threatened or endangered. However, they are hunted when the ODFW determines populations are high in the area.

Chukars are found near canyons and rimrocks in the northern end of the WSA near Trout Creek. Valley quail are also found in the northern end near brushy drainages.

Raptors common to the area include golden eagle, red-tailed hawk, prairie falcon, American kestrel and great horned owl.

Riparian habitat is found along 18.4 miles of stream on public land, mostly along Big Trout Creek and Little Trout Creek. Some of the bird species observed in the riparian habitat are common flicker, yellow warbler, yellow-rumped warbler, yellow-breasted chat, dipper, common bushtit, western wood peewee, green-tailed towhee, white-crowned sparrow, yellow-breasted sapsucker, Say's phoebe and long-eared owl. Parts of the riparian habitat have extensive areas cleared by beaver. Beaver dams are common on most streams.

Twelve miles of stream in Big Trout Creek, Little Trout Creek and the East Fork of Trout Creek, contain hybrid cutthroat/rainbow trout.

Watershed

The WSA contains approximately 18.2 miles of perennial streams consisting mainly of Big and Little Trout Creeks, Stoney Creek and the East Fork of Trout Creek. Some areas where headcutting is evident are on poor condition sites on Big and Little Trout Creeks.

The fecal coliform counts are high in late summer in nearly all of the perennial streams due to heavy concentrations of livestock on the watersheds.

Livestock Grazing

The WSA is located entirely within the Trout Creek Mountain allotment. Livestock grazing is permitted on all public lands in the WSA. Current estimated livestock use is 5,420 AUMs with the season of use extending from April 15 to September 30.

Existing livestock developments (among the unnatural features discussed in the Naturalness section) include 18 reservoirs, 9 spring developments and 11 miles of fence.

Livestock operators each use motorized vehicles on the 6 roads and 10 ways approximately 10 times a year to distribute salt, inspect and maintain fences, springs and reservoirs and check livestock.

There is a shortage of 180 AUMs of livestock forage associated with the WSA portion of the Trout Creek Mountain allotment. Present level of livestock use is also causing a downward trend in the ecological status.

Recreation Use

Most primitive recreation use in the WSA is associated with hunting and fishing. Backpacking and day hiking occurs, but in very low user numbers. Most of the hunters and anglers use motorized vehicles along dead-end roads and ways for access.

Deer hunting activity is high while antelope hunting activity is low. The Trout Creek Mountains Unit is a very popular limited-entry deer hunting area. Hunting for chukars is excellent in the foothills and the drainages flowing out of the mountains, and this activity is moderate. A controlled sage grouse hunt (limited number of permits issued) was allowed in the fall of 1983 and the success rate was high.

Big Trout Creek, Little Trout Creek, and East Fork Trout provide good fishing for cutthroat/rainbow hybrid trout. The fish are small, but abundant, and the angling success rate is high. Present recreation use-levels are moderate and concentrated within the three major drainages. Nearly all of the East Fork, most of Big Trout Creek, and a few portions of Little Trout Creek flow through private land, which limits fishing access in these areas.

Overall recreation use totals less than 800 annual visitor use days.

Local Personal Income

Livestock use at the current level of 5,420 AUMs and recreation use totaling less than 800 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $65,040 for livestock grazing and $9,600 related to recreation use of the WSA, for an overall total of $74,640. The Statewide EIS volume discussed the term local personal income and how income figures have been derived.

4. Environmental Consequences

Introduction

This section discusses the environmental consequences of implementing each of the alternatives in this WSA. Resources and activities not significantly affected by any of the alternatives are not discussed. The Statewide volume also discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness: 27,940 acres
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

All of the WSA would be designated wilderness and wilderness values within the entire 27,940 acres would be protected by legislative mandate. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. The special features, including the outstanding scenery and the presence of the plant species *Allium bisceptrum* and *Melica stricta* would be protected.

The all wilderness alternative would preserve wilderness qualities in the area's three major drainages, Big Trout Creek, Little Trout Creek and the East Fork of Trout Creek, along with their associated features including the tributaries, flat-topped divisional ridges, and aspen, mountain mahogany and riparian vegetation.

Naturalness

The naturalness of the area's ridgetops, particularly between Big Trout Creek and Little Trout Creek where the longest way (approximately 8.5 miles in length) is located, would be enhanced by prohibiting motorized vehicle use. The other ways are shorter extensions (0.25 to 0.75 miles in length) from the end of the dead-end roads or off the area's boundary roads. Closure of 13.5 miles of ways which influence approximately 1,925 acres (6.9 percent of the WSA) would allow the ways to revegetate within two to three growing seasons, making them substantially unnoticeable.

The 13.5 miles of dead-end roads would remain open.

Maintenance of fences would be completed using horses and pack animals; therefore, impacts would be minimal. Maintenance of 9 springs and 18 reservoirs would require use of mechanized heavy equipment approximately once every 10 years. This infrequent use would not prevent the ways from revegetating.

Solitude

Opportunities for solitude provided by the area's large size, many miles of winding canyons and limited vehicle access would be further improved by closing 13.5 miles of ways and eliminating 100 visitor days of motorized recreation use. However, with the continuing use of 13.5 miles of roads, such disturbance from vehicle use would not be completely eliminated.

Maintenance of 9 springs and 18 reservoirs at 10 year intervals would cause short-term disturbance of solitude when mechanized heavy equipment would be brought into the area.

Primitive and Unconfined Recreation

Closure of the 13.5 miles of ways would slightly reduce vehicle-oriented recreation (primarily hunting) and conversely, slightly increase the opportunities for primitive and unconfined recreation opportunities throughout the area. Some of the reduction in vehicle-oriented hunting would be offset by increased use from hunters who prefer nonmotorized access to their hunting area.

Special Features

The potential for impacts by incidental OHV use to plant and animal communities, and species of special interest, would be reduced by closing 13.5 miles of ways. These impacts include soil movement and compaction, impairment of scenic values and minor seasonal disturbance to wildlife inhabiting the study area. The special features would be protected from mineral development because wilderness designation would close 27,210 acres of public land to mineral entry. The 2,250 acres of private and split-estate lands (representing 7.6 percent of the study area), would remain open to development. However, such development is not projected to occur under this alternative.

Conclusion: Wilderness designation of the entire 27,940 acres within the Mahogany Ridge WSA would result in protection of the existing wilderness values and enhancement of these values.

Impacts to Energy and Mineral Development

Wilderness designation would close 27,210 acres of public land to mineral entry. The 1,520 acres of private lands and 730 acres of split-estate lands would remain open to mineral development.

Energy Development

Energy exploration and development would be precluded on 27,210 acres within the WSA.

Projected exploration for oil and gas resources and geothermal resources would be precluded on 27,210 acres. Exploration could occur on 1,520 acres of private inholdings and 730 acres of split-estate. Due to the lack of geologic evidence to justify an extensive exploration/development program, only casual exploration without development is expected.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for diatomite and mercury would be precluded on 27,210 acres. Exploration could occur on 730 acres of split-estate and 1,520 acres of private lands. Due to the confidence level of the mineral potential and economic value of the resources, development of a 150-acre open-pit diatomite mine is projected on existing claims in the northern portion of the WSA. However, wilderness designation would preclude development of the mercury mine.

Conclusion: Production would be foregone from one projected open-pit mercury mine. One projected open-pit diatomite mine would be developed on existing claims.

Impacts on Vegetation

The vegetation composition and the ecological status which is currently in mid-seral stage would continue to decline on the average and particularly in areas subjected to severe or heavy livestock use.

The 13.5 miles of ways, once closed to vehicle use, would revegetate within approximately two to three growing seasons.

Conclusion: Vegetative condition would continue to decline, especially in areas of concentrated livestock use. The 13.5 miles of ways would eventually revegetate naturally.

Impacts on Wildlife

Wildlife habitat would be maintained over 27,970 acres of the WSA. Adequate wildlife forage would be ensured in the preparation of livestock allotment management plans to meet ODFW management objective for deer. ODFW has not set management objectives for antelope.

Wildlife habitat would be subject to possible damage from mining. Disturbance to wildlife or habitat damage could force wintering deer in the Chalk Canyon area to other, possibly inferior habitat. This could cause a slight decline in the Trout Creek Mountain deer herd. Disturbance near the three sage grouse strutting grounds, east of Trout Creek could have adverse effects on these birds, cause abandonment of the area and decrease sage grouse numbers.

The closure of 13.5 miles of ways would have little impact on most wildlife species. Summering antelope and deer would not be disturbed by occasional vehicles and there would be less disturbance to deer during the hunting season when human activity is greatest.

Conclusion: Wildlife habitat and populations would be maintained on 27,970 acres designated wilderness. Disturbance to deer and antelope would be reduced during hunting seasons and mineral development would reduce populations of wintering deer and sage grouse.

Impacts on Watershed

There would be little change in the watershed in the WSA. Wilderness designation would maintain current conditions with respect to perennial streams in the area.

Conclusion: Little change in water quality would occur in the study area.

Impacts on Livestock Grazing

Livestock use would be reduced by 180 AUMs in the Trout Creek Mountain allotment to a total of 5,240 AUMs in the WSA. Development of two springs, designed to increase available forage by improving livestock distribution, would be precluded. The season of use would remain from April 15 to September 30.

Vehicle use for livestock and range management, maintenance and range monitoring would be precluded on 13.5 miles of ways. These actions would have to be conducted on foot or by the use of horses. Maintenance of eight fences would be done on foot or by the use of riding and pack animals. Mechanized heavy equipment would be needed to maintain 18 reservoirs and 9 springs approximately once every 10 years. There would be some increased expense and inconvenience to livestock operators.

Conclusion: Livestock use would be reduced by 180 AUMs. Increased expense and inconvenience for livestock management would be expected by precluding vehicle use on 13.5 miles of ways.

Impacts on Recreation Use

The entire 27,940 acres would be closed to motorized recreation use including 13.5 miles of ways. Primitive recreation in the form of backpacking, hunting and fishing would be expected to increase slightly.

Vehicle-oriented recreation utilizing ways is expected to be displaced into other areas or be partly substituted by primitive recreation. The 13.5 miles of open roads would continue to provide access for motorized recreation use. Projected use patterns indicate that the current level of less than 800 visitor days per year would decrease overtime, to less than 700 visitor days per year.

Some vehicle-oriented recreationists, primarily hunters, may continue to use the WSA, traveling by foot or horseback rather than using vehicles. Others will find different areas where vehicle use is permitted.

Conclusion: Wilderness designation would result in a net reduction in the area's overall recreation use, from less than 800 to less than 700 visitor days per year. This reduction would primarily involve displacement of vehicle-oriented use to other areas, and a change to primitive nonmotorized types of recreation in the WSA.

Impacts on Local Personal Income

Livestock grazing would decrease by 180 AUMs. Overall recreation use would decrease by 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $3,360 per year plus an unknown level of increase attributable to the projected mineral development on existing claims.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $3,400.

Enhanced Wilderness

Recommended suitable for wilderness: 33,340 acres (assuming acquisition of the 4,590 acres of private land)
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

This alternative would add 33,340 acres to the NWPS, assuming 4,590 acres of interior and adjacent parcels of private land are acquired as proposed. Included is an additional 810 acres of public land located on the northern and western sides which would also be recommended suitable. The mineral estate on 730 acres of split-estate lands would also be acquired. Wilderness values and special features would be preserved in the same manner as under the all wilderness alternative. Acquisition of the mineral estate and private lands would prevent potential disturbance from mineral exploration and ensure the preservation of naturalness and opportunities for solitude and primitive recreation.

Naturalness

The naturalness of the area, particularly on the ridgetops between the deep canyons would be enhanced, as the six dead-end roads (total 13.5 miles) would be closed in addition to 13.5 miles of ways. Closure of the roads and ways, (influencing approximately 4,625 acres or 16 percent of the WSA), would allow the access routes to revegetate within two to five growing seasons, making them substantially unnoticeable.

Acquisition of the mineral estate of split-estate lands would eliminate the possibility of development and the need for access to these scattered parcels. Precluding development, impacts from additional roads and vehicles to naturalness would be foregone.

Maintenance of fences would be completed using horses and pack animals; therefore, impacts would be minimal. Maintenance of 9 springs and 18 reservoirs would require use of heavy equipment every 10 years. This infrequent use would not prevent the ways from revegetating.

Solitude

Opportunities for solitude would be improved due to the closure of the six dead-end roads (13.5 miles) and 13.5 miles of ways. Closure of interior vehicle access routes (totaling 27 miles) would reduce visitor use from approximately 800 visitor days to 700 visitor days per year.

Maintenance of 9 springs and 18 reservoirs at 10-year intervals would cause short-term disturbance of solitude when mechanized heavy equipment would be brought into the area.

Primitive and Unconfined Recreation

The quality of primitive recreation would be improved by closing six dead-end roads in addition to the ways, thereby reducing vehicle-oriented recreation.

It is expected that overall recreation use would decline by 100 visitor days because of the vehicle restrictions. The WSA currently receives little primitive recreation use not associated with hunting or fishing. Existing use of the area for primitive types of recreation is low, and it is not anticipated that such use of the area would substantially increase and offset the reduction in vehicle-oriented recreation.

Special Features

The potential for impacts by incidental vehicle use to plant and animal communities and species of special interest would be reduced by closing a total of 27 miles of interior access routes. The acquisition of 4,590 acres of private land and 730 acres of the mineral estate of the split-estate lands would provide protection to special features by removing the need for motorized access and would prevent possible surface disturbance, removal of vegetation, impairment of scenic values and disruption of wildlife on these parcels.

Conclusion: Wilderness designation of 33,340 acres would protect and enhance existing wilderness values and further enhance the total area by preserving wilderness values on all lands within the wilderness boundaries.

Impact on Energy and Mineral Development

Enhanced wilderness designation would close 28,020 acres within the WSA to all forms of mineral entry. Development would also be precluded on an additional 5,320 acres of acquired private land and mineral estate, as proposed under this alternative.

Energy Development

Projected exploration for oil and gas resources and geothermal resources would be precluded on 33,340 acres. Due to the lack of geologic evidence to justify an extensive development program, only casual exploration, without development is expected.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for diatomite and mercury would be precluded on 33,340 acres. One 150-acre diatomite mine would be developed, as projected, on existing claims. However, wilderness designation would preclude development of the projected open-pit mercury mine.

Conclusion: Production would be foregone from one projected open-pit mercury mine. One projected open-pit diatomite mine would be developed on existing claims.

Impacts on Vegetation

The vegetation composition and the ecological status which is currently in mid-seral stage would continue to decline on the average, and particularly in areas subject to severe or heavy livestock use.

The 13.5 miles of ways and 13.5 miles of roads, once closed to vehicle use, would revegetate within approximately two to five growing seasons.

Conclusion: Vegetative condition would continue to decline especially in areas of concentrated livestock use. The 13.5 miles of ways and 13.5 miles of roads would naturally revegetate.

Impacts on Wildlife

Wildlife habitat would be maintained on 28,020 acres of the WSA. Adequate wildlife forage to meet ODFW management objectives for deer would be ensured in the preparation of livestock allotment management plans. ODFW has not set management objectives for antelope.

Wildlife habitat would be subject to possible damage from mining. Disturbance to wildlife or habitat damage could force wintering deer in the Chalk Canyon area to other, possibly inferior habitat. This could cause a slight decline in the Trout Creek Mountain deer herd. Disturbance near the three sage grouse strutting grounds, east of Trout Creek could have adverse effects on these birds, cause abandonment of the area and decrease sage grouse numbers.

The closure of 13.5 miles of roads and 13.5 miles of ways would have little impact on most wildlife species. Summering antelope and deer would not be disturbed by the occasional vehicle intrusion, and there would be less disturbance to deer during the hunting season when human activity is greatest.

The acquisition of 4,590 acres of private lands would add significant fisheries and riparian habitat to public ownership. Acquired private property along streams contains 21.9 miles of streamside riparian habitat. Of this, 20.4 miles is trout habitat mostly on Trout Creek (15 miles) and the East Fork of Trout Creek (4.7 miles) with the remaining on other tributaries. An estimated 48 percent of the riparian habitat in the WSA is within these inholdings. This property also contains high wildlife values for summering deer, antelope, sage grouse and many other species of wildlife.

An estimated 1,600 acres of this private property has been sprayed to kill big sagebrush to increase livestock forage. Acquisition of these sprayed areas would allow the reintroduction of big sagebrush cover to improve deer fawning areas and sage grouse habitat. An increase in both these populations could be expected.

Conclusion: Wildlife habitat and populations would be maintained on 28,020 acres designated wilderness. Disturbance to deer and antelope would be reduced during hunting seasons, and mineral development would reduce populations of wintering deer and sage grouse. High fishery and wildlife values would be added to the WSA.

Impacts on Watershed

If the private inholdings are acquired, 21.9 miles of perennial streams (mainly on Big and Little Trout Creeks and the East Fork of Trout Creek) would be added to the WSA.

There would be little change in watershed in the WSA, including the acquired lands.

Conclusion: Little change in water quality would occur in the WSA.

Impacts on Livestock Grazing

Livestock use would be reduced by 180 AUMs in the Trout Creek Mountain allotment to a total of 5,240 AUMs in the WSA. Development of two springs, designed to increase available forage by improving livestock distribution would be precluded. The season of use would remain from April 15 to September 30.

Vehicle use for livestock and range management, maintenance and range monitoring would be precluded on 13.5 miles of ways and 13.5 miles of dead-end roads. These actions would have to be conducted on foot or by the use of horses. Maintenance of eight fences would be done on foot or by the use of riding and pack animals. Mechanized heavy equipment would be needed to maintain 18 reservoirs and 9 springs approximately once every 10 years. This would result in some increased expense and inconvenience to livestock operators.

Conclusion: Livestock use would be reduced by 180 AUMs. Some increased expense and inconvenience for livestock management would be expected by precluding vehicle use on 13.5 miles of ways and 13.5 miles of dead-end roads.

Impacts on Recreation Use

Motorized use would be precluded on 28,750 acres, including 13.5 miles of ways and 13.5 miles of roads. This would reduce recreation use in the WSA from less than 800 to less than 700 visitor days per year.

Existing use of the area for primitive types of recreation is very low, and it is not anticipated that such use of the area would substantially increase. The quality of primitive recreation, however, would be expected to improve and increase slightly by closing the six dead-end roads. Vehicle-oriented recreation is expected to be reduced and displaced into other areas or be partly substituted by primitive recreation.

Conclusion: Wilderness designation under the enhanced alternative would result in a net reduction in the area's overall recreation use by approximately 100 visitor days per year from less than 800 visitor days to less than 700 visitor days annually. A projected slight increase in primitive recreation would not be sufficient to offset the reduction in vehicle-oriented recreation.

Impacts on Local Personal Income

Livestock grazing would decrease by 180 AUMs. Overall recreation use would decrease by 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $3,360 per year plus an unknown level of increase attributable to the projected mineral development on existing claims.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $3,400.

No Wilderness/No Action (Proposed Action)

Recommended suitable for wilderness: 0 acres
Recommended nonsuitable for wilderness: 27,940 acres

Impacts on Wilderness Values

Under this alternative, the entire 27,940 acres would not be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation, and the area's special features would be subject to the effects of future actions, including mineral development, range projects and motorized recreation use. The potential for the occurrence of diatomite is moderate in the northern third of the WSA while moderate potential exists for mercury throughout the entire WSA. Projected actions include exploration at 50 drill sites for diatomite and mercury and the development of two open-pit mines, the development of two spring sites and continued vehicle use for livestock management and facility inspection/maintenance, and an allocation of 5,420 AUMs of livestock forage. The area would be open to continued motorized vehicle use.

Naturalness

Naturalness would be reduced directly and indirectly on 7,400 acres. Continued vehicle use on 13.5 miles of ways and 13.5 miles of roads would maintain the impact of vehicle tracks upon naturalness on approximately 1,925 acres (6.9 percent of the WSA) for the ways and approximately 2,700 acres (9.7 percent of the WSA) for the roads. Most of this influence upon the area's naturalness occurs on the ridges between the steep canyons of the various drainages.

All projected actions, including range improvements, water developments and mineral exploration and development would be allowed under the no wilderness alternative. These activities would adversely affect naturalness to some degree by disturbing native vegetation or by altering the existing contour of the land. Development of two springs and the accompanying changes in livestock use patterns would directly and indirectly impair naturalness on 52 acres around the immediate spring locations.

Mineral exploration and development for mercury and diatomite would involve 258 acres of surface disturbance in the northern and central portions of the WSA. Approximately 10 acres would continuously be disturbed from mining diatomite over a period of 20 years, as well as an additional 8 acres from development of haul roads and powerlines. Indirect impairment of naturalness as long as the mines were active, would be approximately 2,700 acres.

Solitude

Continued vehicle use on 13.5 miles of ways and 13.5 miles of dead-end roads and human activity associated with exploration for diatomite and mercury would cause repeated, short-term, local impairment of opportunities for solitude. Short-term impairment would also occur on the ridges between the steep canyons where the interior access routes are generally located. Long-term impairment of solitude would be evident when the diatomite mine is put into full-time operation and vehicles and heavy equipment are in the area.

Primitive and Unconfined Recreation

Under this alternative, opportunities for primitive recreation would be reduced by continued vehicle use, mining activities and development of range improvement projects.

Vehicle use would continue on existing roads and ways. Such use would intrude upon primitive, nonmotorized recreation opportunities such as hiking, backpacking, camping, hunting and horseback riding in the localized areas around the 13.5 miles of ways and 13.5 miles of road left open.

Exploration and development of an open-pit diatomite mine and an open-pit mercury mine would intrude on primitive and unconfined recreation activities and, in most instances, completely eliminate the types of opportunities in and around the area of intensive development. Changes to the natural setting would be too great for most people to accept as compatible with these activities.

Special Features

Continued vehicle use of existing roads and ways would maintain the impacts upon special features including deer, antelope, sage grouse and vegetation. These impacts include soil compaction, rutting of riparian/meadow areas and minor seasonal disturbance of deer, antelope and sage grouse.

Mineral exploration and development for diatomite and mercury would result in minimal short-term disturbance of big game, but more long-term disturbance from development could be expected to impact vegetation, and sage grouse. Construction of access roads, transmission lines and buildings would involve removal of vegetation, some movement of soil and other surface materials and placement of human developments out of context with the present characteristic landscape.

Conclusion: In the absence of wilderness designation, projected activities and continued uses would both directly and indirectly impair wilderness values over approximately 7,400 acres with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

The entire 27,940-acre WSA would remain open to mineral entry.

Energy Development

Projected exploration for oil and gas resources and geothermal resources would be allowed. However, due to the lack of geologic evidence to justify an extensive exploration/development program, only casual exploration, without development is projected.

Conclusion: There would be no impact to energy development.

Mineral Development

Mining for diatomite and mercury is projected to include development of two open-pit mines within the northern and central portions of the WSA.

Conclusion: Production would occur from one projected diatomite mine and one mercury mine in the WSA.

Impacts on Vegetation

The two spring developments, with fenced sources and overflows (exclosures) would disturb two acres of surface area and corresponding vegetative cover. Within the exclosures vegetative cover would increase and the ecological status would move towards its potential natural community. However, piping the water away from the spring sources to water tanks would concentrate livestock and destruction of vegetative cover would be likely on nearby uplands.

These developments would enhance watershed resources and alter grazing patterns to alleviate a shortage of available forage. By making these water sources available, livestock would be able to graze in areas that, heretofore, have not been utilized to their fullest extent. These areas would tend to have a more grazed appearance with decreased ground cover.

At the same time, grazing pressure would be alleviated on present areas of use. This would allow vegetation more time to recover and regain its vigor and allow grazing to be distributed over a larger area with less overall intensity of use on pastures in the allotment.

The 13.5 miles of existing ways and 13.5 miles of dead-end roads would not revegetate due to continued vehicle use. Vegetation would be removed on approximately 260 acres from projected mineral development.

Conclusion: Development of two spring sources would tend to distribute livestock grazing over a larger area for utilization of available forage. Access routes would not revegetate because of continued vehicle use. Vegetation would be removed on approximately 260 acres.

Impacts on Wildlife

Adequate wildlife forage would be ensured in the preparation of livestock allotment management plans to meet ODFW management objectives for deer. ODFW has not set management objectives for antelope. Wildlife habitat would be subject to possible damage from mining. Disturbance to wildlife or habitat damage could force wintering deer in the Chalk Canyon area to other, possibly inferior habitat. This could cause a slight decline in the Trout Creek Mountain deer herd. Disturbance near the three sage grouse strutting grounds, east of Trout Creek could have adverse effects on these birds, cause abandonment of the area and decrease sage grouse numbers.

An open-pit mercury mine in the central part of the WSA would effect summering deer and nongame species due to habitat damage and disturbance from equipment, blasting, etc. Sage grouse and antelope could also be adversely affected depending on the type of habitat disturbed. Fisheries could be affected due to possible water pollution by mercury and other contaminants used in mining.

The development of two springs for livestock would have little affect on wildlife. Some reduction in ground cover used by nesting birds and small mammals could occur due to additional cattle use near the water developments.

Predator control would not be affected.

Conclusion: Wildlife habitat could be damaged due to possible mineral development. Strongest adverse impacts could occur at three sage grouse strutting grounds and on deer winter range. Deer, antelope, trout and nongame species could also be adversely affected.

Impacts on Watershed

The development of two spring sites would exclude livestock from the springs areas and improve water quality, increase vegetative growth and lower fecal coliform counts within the small fenced exclosure.

Mining could pollute a portion of the watershed by allowing mercury and other contaminants to seep into nearby streams.

Conclusion: Water quality would improve and vegetation would become established inside the fenced exclosures and around the springs. Little change would occur over the rest of the WSA. The watershed could be affected due to possible water pollution by mercury and other contaminants used in mining.

Impacts to Livestock Grazing

Licensed livestock use would remain at the current level of 5,420 AUMs within the WSA with the season of use occurring from April 15 to September 30.

Vehicle use would continue on all ways and roads for livestock management and inspection and maintenance of developments. Mechanized heavy equipment would be used to maintain 11 spring developments (including two new spring sources) and 18 reservoirs approximately once every 10 years. The two new springs would be developed to sustain livestock use at the present level by providing water in areas with underutilized forage.

Conclusion: Livestock grazing would be sustained at the current level of 5,420 AUMs by better distribution of cattle over a larger area in the WSA. This would be achieved by development of two spring sources in underutilized areas. Access routes would remain open to motorized vehicle use.

Impacts on Recreation Use

Motorized recreation use would continue on 27,940 acres in the WSA. Overall, the area's recreation use level would continue to be low. Projected use patterns indicate that the current level of 800 visitor days per year would increase over time to 815 visitor days per year.

Conclusion: Recreation use would increase from the current level of 800 visitor days per year to approximately 815 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 5,420 AUMs. Projected energy and mineral development would amount to one metallic mine and one non-metallic mine. Overall recreation use would increase by 15 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $180 per year plus an unknown level of increase attributable to the projected energy and mineral development.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by approximately $200.

Unavoidable Impacts of the Proposed Action

Under the Proposed Action (No Wilderness/No Action), continued motorized vehicle use along 13.5 miles of ways would locally impair wilderness values. Mineral exploration would lead to unavoidable adverse impacts to wilderness values on approximately eight surface acres, and development would impact approximately 258 surface acres. Development of two spring sites would disturb two acres. Visually, approximately 7,400 acres would be adversely impacted under the no wilderness alternative.

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity

Under the Proposed Action, all short-term uses would continue and future development options would remain open. Long-term productivity of wilderness values would be directly lost on 258 surface acres and indirectly on 2,700 acres from exploration and development of diatomite and mercury and directly on two surface acres and indirectly on 52 acres from spring developments. Further declines from other uses over the long-term on site-specific areas could also be expected.

Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, mineral exploration and development would result in an irreversible commitment of the wilderness values and resources on 258+surface acres and indirectly on 2,700 acres of WSA, as well as irretrievable commitment of the mineral resources. Construction of two spring developments would further reduce wilderness values on two surface acres and indirectly on 52 acres.

5. Wilderness Manageability and Rationale for the Proposed Action

Manageability of the Area as Wilderness

The Mahogany Ridge WSA would not be manageable as wilderness under the all wilderness alternative. This is largely due to the extensive amount of private land which occurs within the study area's boundary and the location of those inholdings along the major drainages.

Almost all of the private inholdings in the Mahogany Ridge study area are along the creeks in two of the study area's three major drainages (Big Trout Creek and the East Fork Trout Creek) where much of the recreation use would occur under wilderness designation. Few, if any, of the inholdings are fenced or otherwise marked to indicate private ownership. Management of recreation use under these circumstances would be extremely difficult.

Another management difficulty occurs along the northern and western boundaries, where the boundary is formed primarily by private land. In addition, the northern boundary also includes a "finger" of private land which extends into the study area along Big Trout Creek. In both areas the subdivisions are not easily identified on the ground and would be difficult to manage. Portions of this private land along Big Trout Creek are currently used for agricultural purposes.

Other substantial manageability problems under an all wilderness alternative include the potential for development of the study area's inholdings. All of the private and split-estate land would be available for development of other resources which would not be compatible with wilderness management. These developments could include water resource development, energy and mineral development, and range improvements. Such developments would likely require access. Development and access would present extensive problems in managing the area as wilderness.

The area would be manageable as wilderness under the enhanced wilderness alternative. Acquiring both the inholdings and boundary parcels would greatly improve manageability problems because the boundary would be more identifiable; it would be along a major road instead of along legal subdivisions. With extensive acquisition of private lands and mineral estate, problems with recreation use, access and potential development would also be substantially reduced.

The only portions of the WSA where manageability problems could still occur would be along the northern boundary where the study area is bounded by private land and a finger of developed private land that extends into the area along Big Trout Creek.

Rationale for Selection of the Proposed Action

The no wilderness/no action alternative is the proposed action because the Mahogany Ridge WSA is not manageable under the all wilderness alternative. The study area possesses a variety of high quality recreational opportunities, offers opportunities for solitude, and is in a basically natural condition. However, due to the presence of private land inholdings and a boundary which is largely formed by private land, it would not be possible to manage the area to protect its wilderness values without the acquisition of an extensive amount of private land.

6. Summary and Analysis of Public Comments

Following is a summary of public comments specific to the WSA concerning adequacy of the analysis in this appendix and responses to those comments. These comments were received both in writing and oral testimony at public hearings during the comment periods for the 1985 Draft EIS and the I987 Supplement to the Draft EIS. Comments concerning the BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning statewide issues and analysis are addressed in the Statewide volume.

Comment: Combine WSA with Trout Creek Mountain Complex.

Response: It would not be feasible to close the BLM-maintained dirt road separating the WSA from adjacent WSAs as it provides public access for hunting and livestock management, access to private lands and access for BLM management activities.

Comment: Water development needed for wildlife; and resident cutthroat and rainbow trout need riparian restoration plan.

Response: Wildlife management projections developed for purposes of analysis in this EIS did not foresee the need for wildlife improvement projects within the WSA.

Table 1. Summary of Projected Management Actions Under Each Alternative, Mahogany Ridge WSA (OR-2-77)

Proposed Management	All Wilderness	Enhanced	No Wilderness/ No Action
Acres Designated as Wilderness	27,940	28,750	0
Acres Closed to ORVS by Wilderness Designation	27,940	28,750	0
Miles of Roads Closed	0	13.5	0
Miles of Ways Closed	13.5	13.5	0
Miles of Roads Constructed	2	2	4
Acres of Full Fee Estate Acquired[1]	0	4,590	0
Acres of Mineral Estate Acquired[2]	0	730	0
Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation	27,210	28,020	0
Mine Sites Developed	1	1	2
Structural Livestock Projects Developed: Springs (number)	0	0	2
Decreased Livestock Forage Allocation (AUMs)	180	180	0

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[1] Upon acquisition, these additional lands would be incorporated into the wilderness area, closed to vehicle use, and withdrawn from mineral location and leasing.

[2] Upon acquisition of mineral estate these lands would be withdrawn from mineral location and leasing.

Table 2. Summary of Environmental Consequences of Alternatives, Mahogany Ridge WSA (OR 2-77)

Resource or Activity	All Wilderness	Enhanced Wilderness	No Wilderness/No Action
Wilderness Values	Wilderness designation of the entire 27,940 acres within the Mahogany Ridge WSA would result in the protection and enhancement of existing wilderness values.	Wilderness designation of 33,340 acres (assuming acquisition of 4,590 acres of private property) would protect and enhance existing wilderness values. The acquisition of 730 acres of mineral estate of split-estate lands would further enhance the total area by preserving wilderness values on all lands within the wilderness boundaries.	In the absence of wilderness designation, projected activities and continued uses would directly and indirectly impair wilderness values over approximately 7,400 acres with further declines from the potential uses over the long term.
Energy and Mineral Development	No impact to energy development is expected. Production would be forgone from one projected open-pit mercury mine. One projected open-pit diatomite mine would be developed on existing claims.	No impact to energy development is expected. Production would be forgone from one projected open-pit mercury mine. One projected open-pit diatomite mine would be developed on existing claims.	There would be no impact to energy development. Production would occur from one projected diatomite mine and one mercury mine in the WSA.
Vegetation	Vegetative condition would continue to decline, especially in areas of concentrated livestock use. The 13.5 miles of ways would naturally revegetate.	Vegetative condition would continue to decline, especially in areas of concentrated livestock use. The 13.5 miles of ways and 13.5 miles of roads would naturally revegetate.	Development of two spring sources would tend to distribute livestock grazing over a larger area for utilization of available forage. Access routes would not revegetate because of continued vehicle use. Vegetation removed on 260 acres.
Wildlife	Wildlife habitat and populations would be maintained on 27,970 acres designated wilderness. Disturbance to deer and antelope would be reduced during hunting seasons and mineral development would reduce populations of wintering deer and sage grouse.	Wildlife habitat and populations would be maintained on 28,020 acres designated wilderness. Disturbance to deer and antelope would be reduced during hunting seasons and mineral development would reduce populations of wintering deer and sage grouse. High fishery and wildlife values would be added to the WSA.	Wildlife habitat could be damaged due to possible mineral development. Strongest adverse impacts could occur at three sage grouse strutting grounds and on deer winter range. Deer, antelope, trout and nongame species could also be adversely affected.
Watershed	Little change in water quality would occur in the study area.	Little change in water quality would occur in the WSA.	Water quality would improve and vegetation would become established inside the fenced exclosures and around springs. Little change would occur over the rest of the WSA. The watershed could be affected due to possible water pollution by other contaminants used in mining.
Livestock Grazing	Livestock use would be reduced by 180 AUMs. Increased expense and inconvenience for livestock management would be expected by precluding vehicle use on 13.5 miles of ways.	Livestock use would be reduced by 180 AUMs. Some increased expense and inconvenience for livestock management would be expected by precluding vehicle use on 13.5 miles of ways and 13.5 miles of dead-end roads.	Livestock use would be sustained at the current level of 5,420 AUMs by better distribution of cattle over a larger area in the WSA. This would be achieved by development of two spring sources in underutilized areas. Access would remain open to motorized vehicle use.

Table 2. Summary of Environmental Consequences of Alternatives, Mahogany Ridge WSA (OR 2-77) (continued)

Resource or Activity	All Wilderness	Enhanced Wilderness	No Wilderness/No Action
Recreation Use	Wilderness designation would result in a net reduction in the area's overall recreation use, from less than 800 to less than 700 visitor days per year. This reduction would primarily involve displacement of vehicle-oriented use to other areas, and a change to primitive non-motorized types of recreation in the WSA.	Wilderness designation would result in a net reduction in the area's overall recreation use by approximately 100 visitor days per year from less than 800 visitor days to less than 700 visitor days annually. A projected slight increase in primitive recreation would not be sufficient to offset the reduction in vehicle-oriented recreation.	Recreation use would increase from the current level of 800 visitor days per year to approximately 815 visitor days per year.
Local Personal Income	Annual local personal income would decrease by approximately $3,400.	Annual local personal income would decrease by approximately $3,400.	Annual local personal income would increase by approximately $200.

Table 3. Classification of Energy and Mineral Potential, Mahogany Ridge WSA (OR-2-77)

Commodity	Area	Level of Potential	Level of Certainty
Metals (copper, mercury)	Entire WSA	M	B
Geothermal	See Map 4	M	C
	Rest of WSA	L	B
Uranium/Thorium	Entire WSA	L	B
Coal	Entire WSA	O	C
Oil/Gas	Entire WSA	L	A
Tar Sands/Oil Shale	Entire WSA	O	C
Limestone	Entire WSA	O	C
Bentonite	Entire WSA	L	B
Diatomite	See Map 4	M	C
	Rest of WSA	L	B
Zeolites	Entire WSA	L	A

Legend:

Level of Potential

O - No indication for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Moderate potential for accumulations of energy/mineral resource
H - High potential for accumulations of energy/mineral resource

Level of Certainty

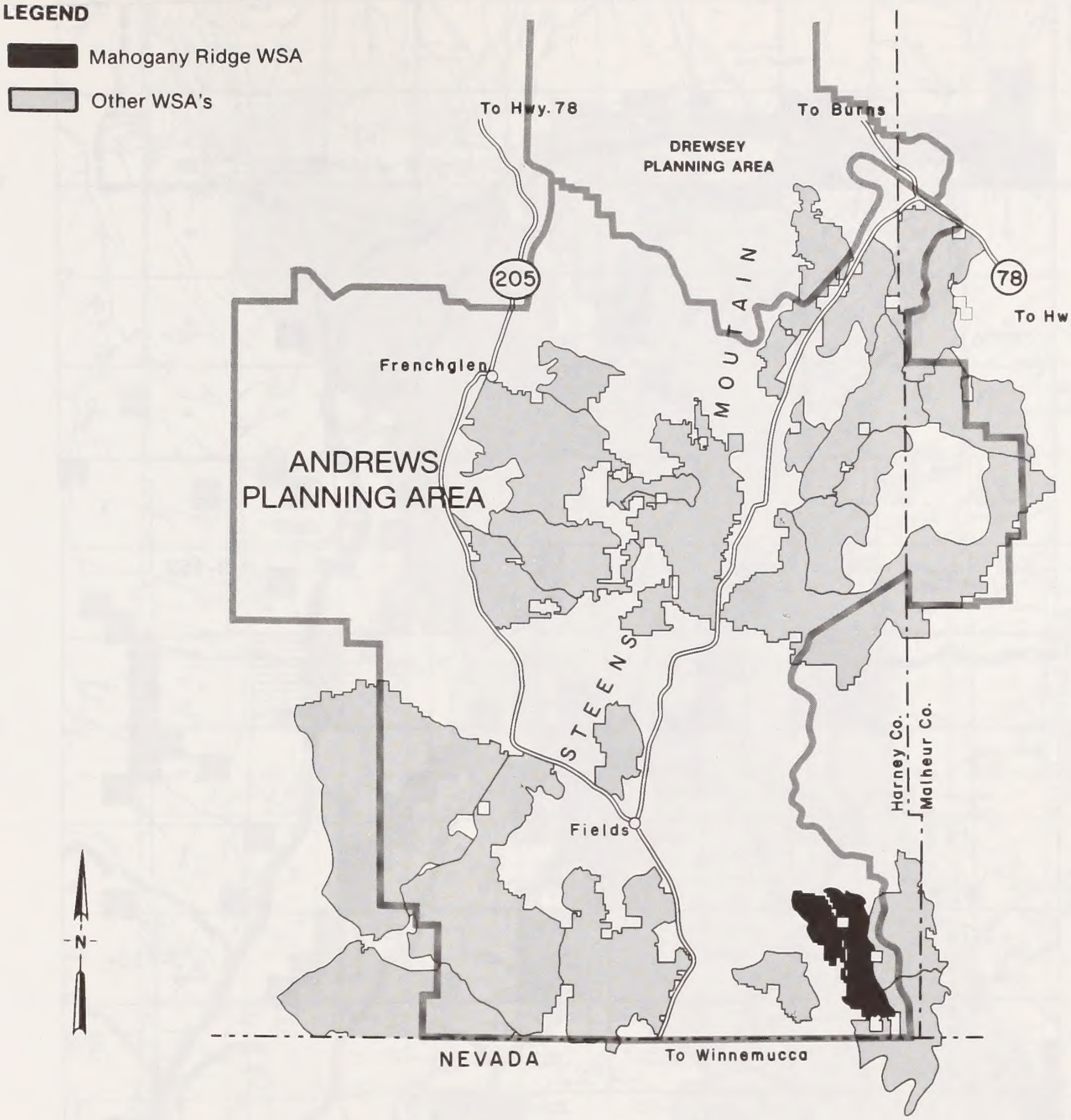
A - Insufficient data or no direct evidence
B - Indirect evidence available
C - Direct evidence but quantitatively minimal
D - Abundant direct and indirect evidence

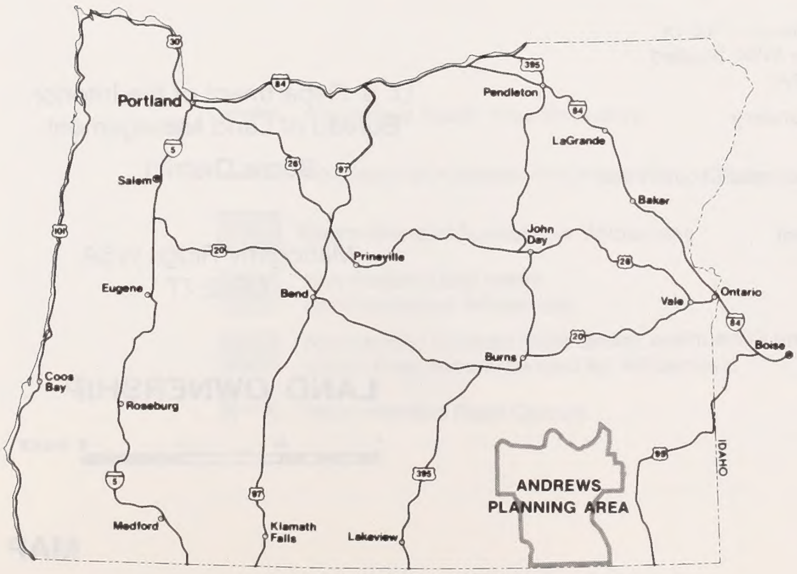
Table 4. Existing and Potential Livestock Use, Mahogany Ridge WSA (OR-2-77)

Grazing Allotment	Licensed AUMs in Allotment	Period of Use	Percent of of Allotment in WSA	Current EstimatedUse in WSA (AUMs)
Trout Cr. Mountain (No. 6015)	13,671	07/01-09/30	33	5,420

Table 5. Effects of Alternatives on Local Personal Income, Mahogany Ridge WSA (OR-2-77) (1981 price levels)

Item	Unit of Measure	All Wilderness	Enhanced Wilderness	No Wilderness/ No Action
CHANGES IN RESOURCE OUTPUTS				
Livestock Grazing	AUMs	-180	-180	No Change
Energy & Mineral Development:				
Metallic Mines	Number	0	0	1
Non-Metallic Mines	Number	1	1	1
Recreation Use	RVD	-100	-100	+15
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES				
Livestock Grazing	$	-2,160	-2,160	0
Energy & Mineral Development:				
Metallic Mines	$	0	0	Unknown
Non-Metallic Mines	$	Unknown	Unknown	Unknown
Recreation Use	$	-1,200	-1,200	+180
Total	$	-3,360	-3,360	+180





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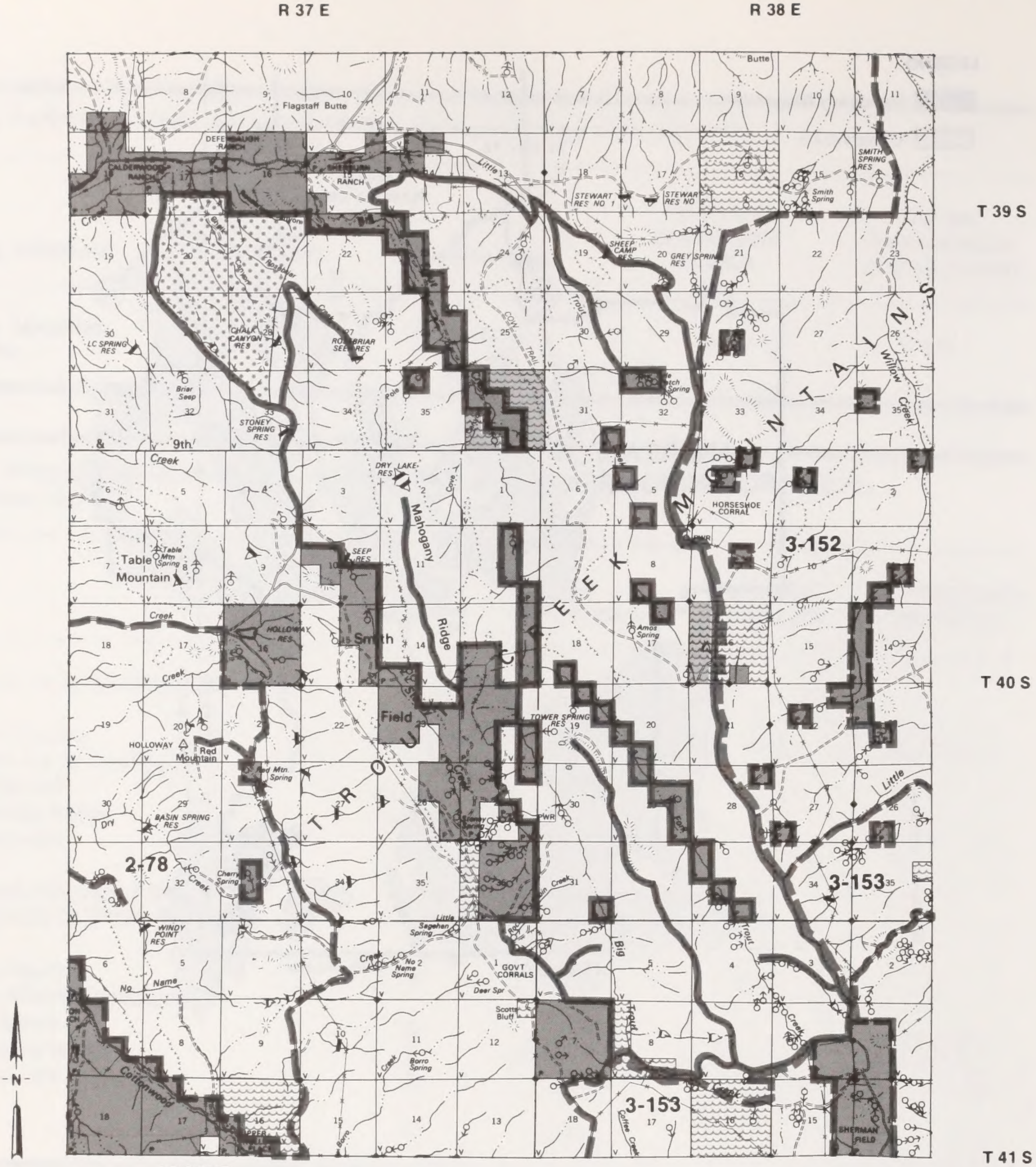
Mahogany Ridge WSA
OR-2-77

LOCATION MAP

10 0 10 MILES

MAP 1



LEGEND

▨ BLM Land Studied Under Section 202 of FLPMA (Other BLM Land in WSA Studied Under Section 603 of FLPMA)

▬ Wilderness Study Area Boundary

▬ ▬ Boundary of Adjacent Wilderness Study Areas

□ Bureau of Land Management

■ Private

▤ BLM Surface-State or Private Subsurface (Split Estate)

⁙ **Deer Winter Range**

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Mahogany Ridge WSA
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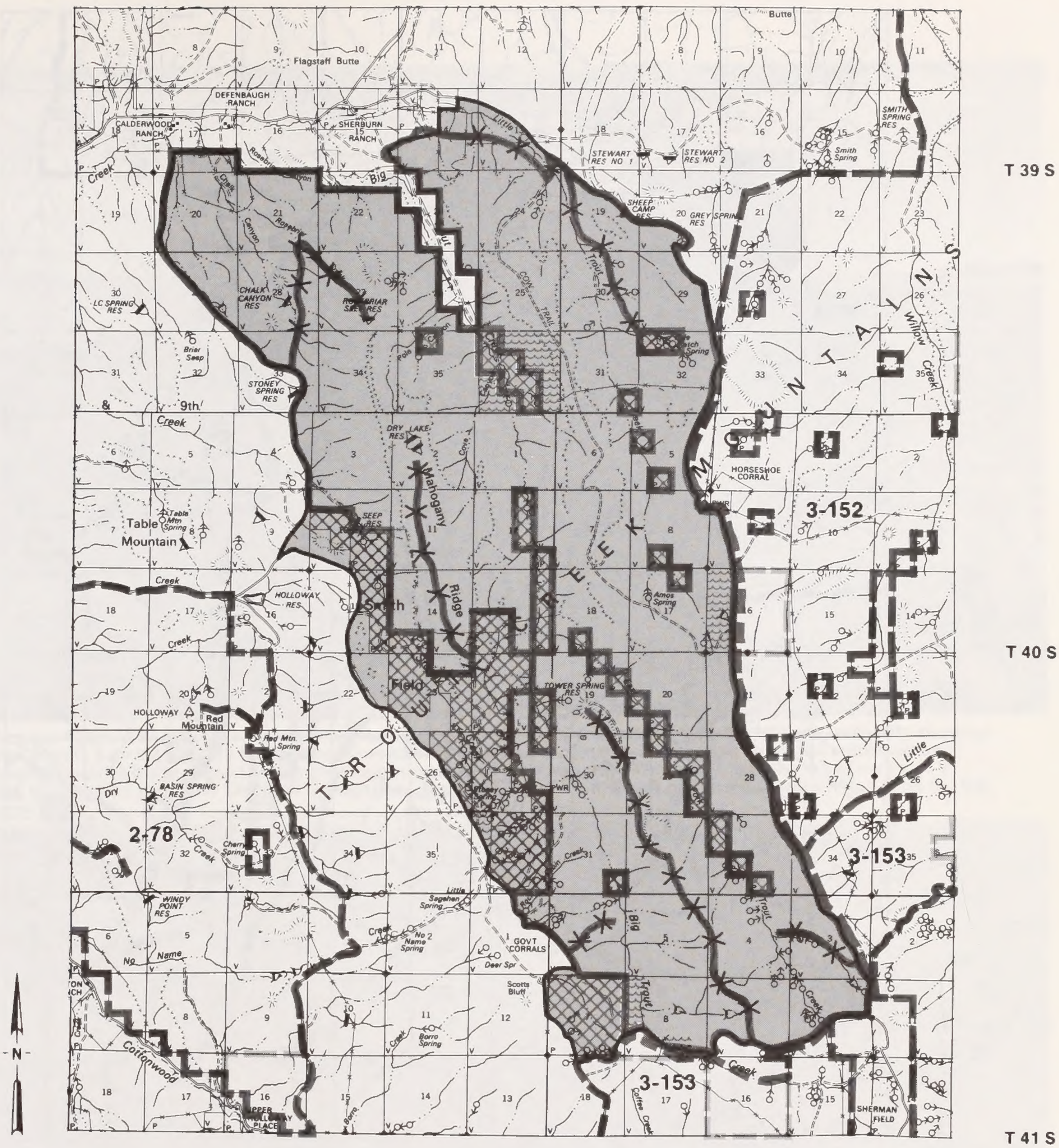
LAND OWNERSHIP

1 0 1 2 MILES

MAP 2



━ Wilderness Study Area Boundary

▬ ▬ Boundary of Adjacent Wilderness Study Areas

▩ Recommended Suitable for Wilderness

▨ Non-Federal Land within Recommended Wilderness

▤ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness

╳ ╳ Recommended Road Closure

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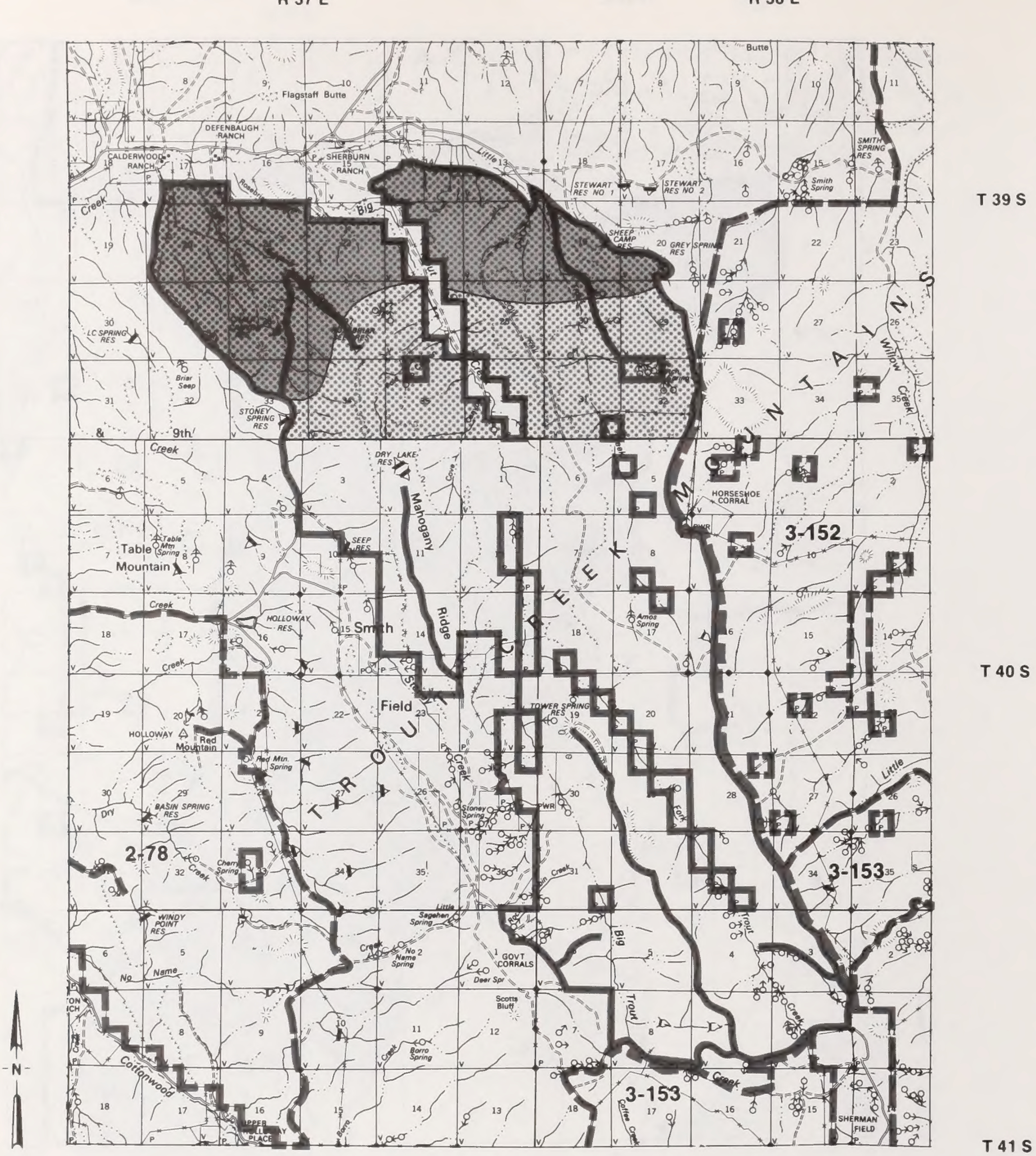
Mahogany Ridge WSA
OR-2-77

ENHANCED ALTERNATIVE

1 0 1 2 MILES

MAP 3



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▦ **Moderate Potential (MC) for Diatomite**

▨ **Moderate Potential (MC) for Geothermal Resources**

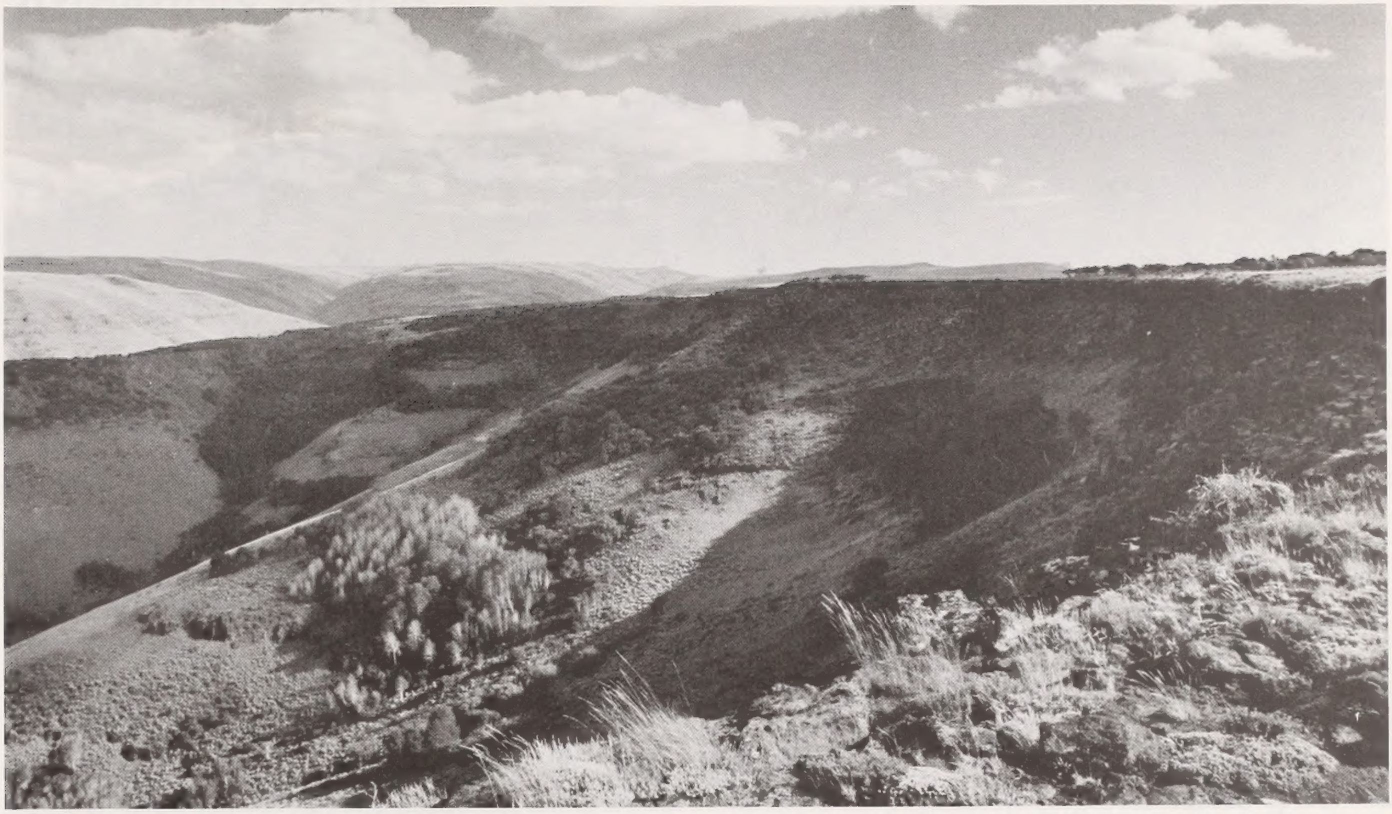
Entire WSA: Moderate Potential (MB) for Mercury

Mahogany Ridge WSA
OR-2-77

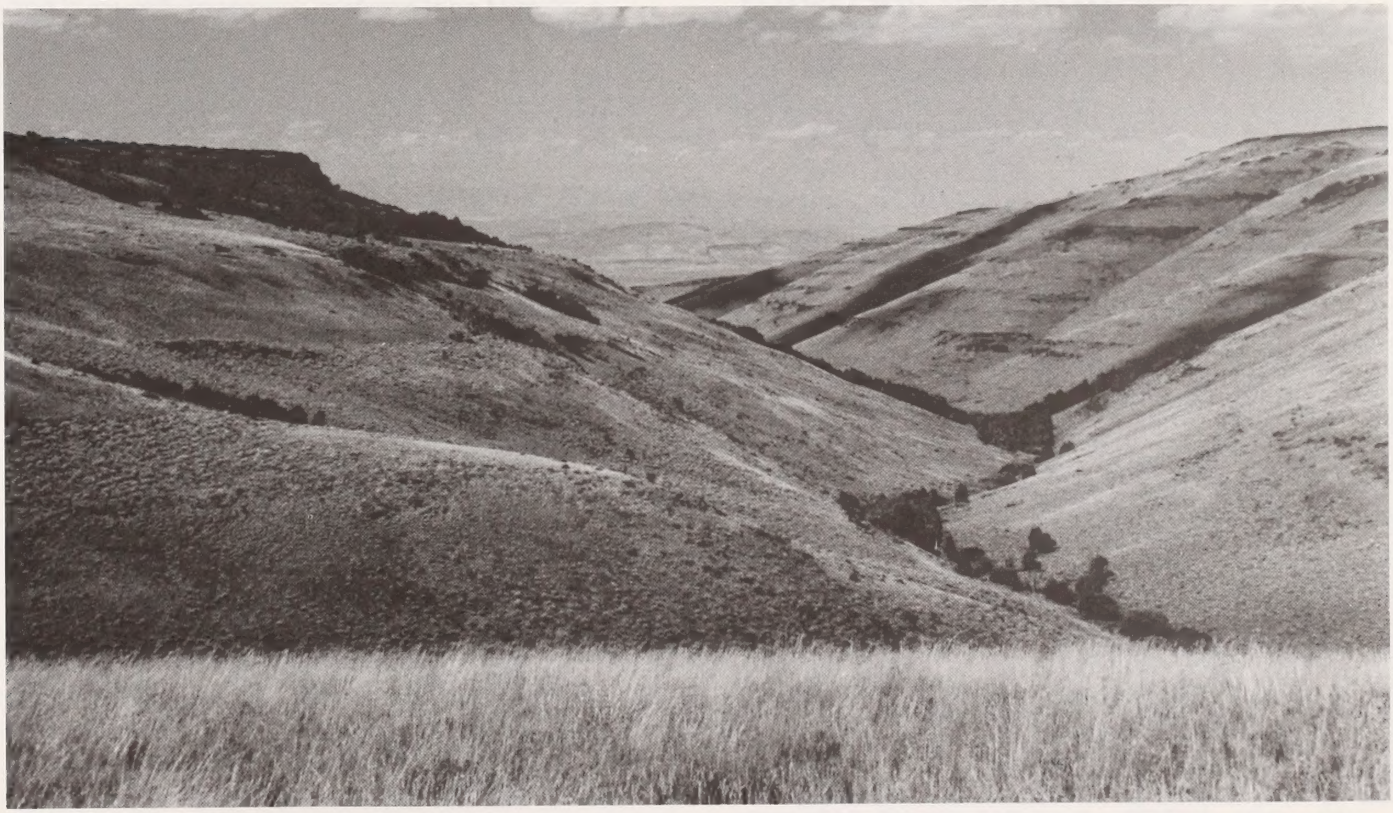
MODERATE OR HIGH POTENTIAL MINERAL OR ENERGY RESOURCES

1 0 1 2 MILES

MAP 4



Mahogany Ridge WSA, OR-2-77. Looking to the southeast from the eastern side of Mahogany Ridge, primarily showing Cove Canyon, a small tributary to Big Trout Creek. Within the area recommended suitable under the enhanced and nonsuitable under the proposed action (no wilderness/no action) alternative. The ridgeline to the left of center is V Ridge, bounded by Big Trout Creek on the right and the East Fork of Trout Creek on the left. Center Ridge is on the left. August 1983.



Mahogany Ridge WSA, OR-2-77. Bounded by Center Ridge on the left, this view of Little Trout Creek is to the north looking downstream. Within the area recommended suitable under the enhanced and nonsuitable under the proposed action (no wilderness/no action) alternative. Little Trout Creek winds its way through the northeastern corner of the study area. Several small parcels of private land are located within the drainage and include portions of the creek. August 1983.

Mahogany Ridge WSA, OR-2-77. Looking southeast across the Little Trout Creek drainage. Within the area recommended suitable under the enhanced and nonsuitable under the proposed action (no wilderness/no action) alternative. Aspen groves in Little Trout Creek provide increased opportunities for solitude, summer shade, cover for wildlife and add to the scenic values of the area. August 1983.

Mahogany Ridge WSA, OR-2-77. Big Trout Creek looking north from about two miles south of the confluence with the East Fork. The area is recommended suitable under the enhanced and nonsuitable under the proposed action (no wilderness/no action) alternative. Big Trout Creek runs through the entire length of the study area. In this area the canyon is 400 to 500 feet deep. August 1983.

Appendix to the Wilderness Environmental Impact Statement for Oregon

Red Mountain Wilderness Study Area (OR-2-78)

1. Introduction

General Description of the Study Area

The Red Mountain Wilderness Study Area (WSA) is located 105 miles southeast of Burns, Oregon, (about 6 miles northeast of Denio, Nevada) in Harney County (see Map 1). The nearest highway is Nevada State Highway 140 which is 12 miles southwest of the WSA.

The study area contains 16,215 acres of public land and is roughly triangular in shape (see Map 2). It contains one 80-acre parcel of private land, located near the eastern boundary, and 1,035 acres of split-estate lands where the mineral estate is privately owned.

The area's northern boundary is formed by a combination of two BLM roads and an irrigation ditch and pipeline. The eastern boundary is composed of BLM roads and a small parcel of private land. The southern boundary is formed by private land and BLM roads. The western boundary is formed by a county road. Three dead-end roads, totaling 5 miles, enter the study area and make up part of the boundary (one each from the north, east and south).

The study area lies on the southwest edge of the Trout Creek Mountains adjacent to the Pueblo Valley. The dominant topographic feature is Red Mountain which rises to 6,280 feet near the WSA's eastern boundary. This mountain's ridgeline extends southeast for nearly 2 miles, with areas of rock outcroppings. West of Red Mountain, the entire middle portion of the area consists of numerous ridges and hills. Flat lowlands occur in the extreme western portion of the area where the lowest elevation is 4,240 feet.

No perennial streams are found within the study area. Four intermittent creeks (Oreanna, Red Mountain, Dry and No Name) drain the western portion of the area. These creeks or their tributaries have cut into the topography of the WSA and provide some topographic variety.

The dominant vegetation is big sagebrush with a variety of grasses making up the understory vegetation. There are two springs within the area which have patches of aspen and chokecherry. A portion of an old crested wheatgrass seeding is located along the northern boundary within the WSA.

Interrelationships

The WSA is located within ODFW's Whitehorse Wildlife Management Unit which contains 4,882-square-miles of land. The WSA supports a summer population of an estimated 100 deer and 30 antelope, and a winter population of 500 deer and 30 antelope. ODFW conducts an annual aerial census of wintering deer in the WSA. ODFW has not set management objectives for antelope, but has a management objective of 5,500 deer for the entire Whitehorse Unit.

ODFW has proposed the reintroduction of California bighorn sheep into the WSA. The California bighorn sheep is a candidate for Federal listing under the Endangered Species Act. Bighorn sheep were native to this area until the late 1800's, but were extirpated due to livestock diseases and overgrazing. ODFW proposes to release bighorns into the area with a management objective of 50 bighorns for the Red Mountain-Cottonwood Creek area. Approximately one-half of the suitable bighorn habitat lies within the WSA. Most of the increase would be due to natural population growth following release. This site is one of five identified in the Burns District as potential transplant sites. It ranks 18th on the ODFW's state-wide priority list.

The goal for nongame wildlife is to maintain populations of naturally-occurring species at self-sustaining levels. The proposed action for this WSA conforms with ODFW's management objectives for deer, antelope, bighorn sheep and nongame species.

The U.S. Department of Agriculture conducts a predator-control program to reduce coyote predation of wintering deer by aerial shooting of coyotes.

Harney County has not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study and EIS planning, scoping and public review process. These issues concern both the effects of wilderness designation on existing and potential land uses or resources in the WSA, as well as the effects of existing and potential land uses or resources on wilderness values. Land uses or resources raised as issues specifically for this WSA include:

- impact on wilderness values;
- impact on potential energy and mineral development,
- impact on vegetation;
- impact on California bighorn sheep habitat; and
- impact on livestock grazing use levels and management

No other issues specific to this WSA were raised by BLM or the public.

2. Description of the Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made.

A 1-mile section of road that forms part of the western boundary is a high standard gravel road, as is a 3-mile section of road forming the northern boundary, and a 4-mile section of road that forms part of the eastern boundary. The remaining roads that form sections of the boundary line (see General Description section) and the three dead-end roads that enter the WSA are all low standard dirt roads.

The following alternatives are analyzed:

- all wilderness
- enhanced wilderness
- no wilderness/no action (proposed action)

A partial alternative is not analyzed because there are no opportunities to resolve resource conflicts by reducing the size of the study area and still retain the necessary wilderness values.

The enhanced alternative does not analyze combining this study area with the nearest other WSA (Mahogany Ridge, OR-2-77) in the Trout Creek Mountain Complex because of important access and land status conflicts. A road providing primary access for both the public (to private land, for livestock management, for hunting) and BLM use cannot be feasibly closed. Extensive private inholdings which lie along the western boundary of the other WSA would clearly hamper overall management, or require the acquisition of substantial private acreage.

All Wilderness

The all wilderness alternative would recommend all 16,215 acres of the Red Mountain WSA suitable as wilderness (see Map 2). For purposes of analysis, it is assumed that the three dead-end roads which penetrate the area would remain open to vehicle use. Under this alternative, the 80 acres of private land and the mineral estate of 1,035 acres of split-estate land would not be acquired.

Energy and Mineral Development Actions

Wilderness designation would close 15,180 acres of public land within the WSA to all forms of appropriation under the mining and mineral leasing laws. Mineral and/or energy development could occur on 1,035 acres of split-estate lands. Additionally, the 80-acre private inholding would remain open to energy and mineral exploration and development at the landowners discretion.

Minerals that have a moderate potential for occurrence include mercury and diatomite (see Table 3). Due to a lack of geologic evidence there are no known deposits of sufficiently large ore bodies that would merit development. No claims are located within the WSA. Further there is a producing diatomite mine in the region, with ample reserves. Due to these factors, and the presence of a thick volcanic covering on the surface, only casual exploration, without development is projected

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

ODFW has proposed the release of California bighorn sheep into the WSA.

Livestock Management Actions

Based on preliminary studies, a reduction in livestock grazing use of 200 AUMs is projected for this WSA, depending on the results of further monitoring. This reduction would result in a total livestock grazing use of 909 AUMs in the WSA. In the absence of new range improvement projects designed to increase available forage, a reduction would be necessary to offset a shortage of available forage in the Trout Creek Mountain allotment. The season of use would remain from April 16 to June 15.

Vehicle use for livestock management on 7 miles of ways would be precluded. Management of livestock and maintenance of 6 miles of fence would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years to maintain the six reservoirs and four developed springs and every 5 years for the 0.12 mile of pipeline and trough. The three irrigation ditches would be maintained as frequently as required, by means of mechanized heavy equipment and motorized transportation.

Recreation Management Actions

The entire 16,215 acres would be closed to motorized vehicle use, including 7 miles of vehicle ways. There would be three dead-end roads totaling 5 miles which would remain open under this alternative.

At this time, vehicle use is limited to existing roads and ways under an off-highway vehicle use designation.

Recreational use is estimated to be 100 visitor days per year. Most of this use involves vehicular access into the area via existing roads and ways.

Enhanced Wilderness

The enhanced wilderness alternative would recommend all 16,215 acres of public land in the WSA suitable for wilderness (see Map 3). Also, an attempt would be made to acquire the 80 acres of private land and mineral estate of 1,035 acres of split-estate land through purchase or exchange with willing owners. Assuming acquisition of private lands, the total area recommended suitable under this alternative would be 16,295 acres. The three dead-end roads totaling 5 miles in length and 7 miles of ways would be closed (see Map 3).

Energy and Mineral Development Actions

Wilderness designation would close 15,180 acres of public land within the WSA to all forms of appropriation under the mining and mineral leasing laws. If acquisition is successful, 1,115 acres of split-estate and private lands would also be closed to mineral entry for a total of 16,295 acres. Exploration for mercury or diatomite would be prohibited.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

ODFW has proposed the release of California bighorn sheep into the WSA.

Livestock Management Actions

Based on preliminary studies, reduction in livestock grazing use of 200 AUMs is projected for this WSA, depending on the results of further monitoring. This reduction would result in a total livestock grazing use of 909 AUMs in the WSA. In the absence of new range improvement projects designed to increase available forage, a reduction would be necessary to offset a shortage in available forage in the Trout Creek Mountain allotment. The season of use would remain from April 16 to June 15.

Vehicle use for livestock management on 7 miles of ways and 5 miles of dead-end roads would be precluded. Management of livestock and maintenance of 6 miles of fence would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years to maintain the six reservoirs and four developed springs and every 5 years for the 0.12 mile of pipeline and trough. The three irrigation ditches would be maintained as frequently as required, by means of mechanized heavy equipment with motorized transportation.

Recreation Management Actions

Assuming acquisition of the private inholding, the entire 16,295 acres would be closed to vehicle use including 5 miles of roads and 7 miles of ways. At this time, vehicle use is limited to existing dead-end roads and ways under an off-highway vehicle use designation.

Recreational use is estimated to be 100 visitor days per year. Most of this use involves vehicular access into the area via existing roads and ways.

No Wilderness/No Action (Proposed Action)

The no wilderness/no action alternative would recommend the entire WSA nonsuitable as wilderness. It represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

All of the 16,215 acres in the WSA would be open to mineral and energy exploration and development.

Minerals that have a moderate potential for occurrence include mercury and diatomite (see Table 3). Due to a lack of geologic evidence there are no known deposits of sufficiently large ore bodies that would merit development. No claims are located within the WSA. Further, there is a producing diatomite mine in the region with ample reserves. Due to these factors, and the presence of a thick volcanic covering on the surface, only casual exploration without development is projected

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment managemement plan goals to ensure sufficient forage for wildlife.

ODFW has proposed the release of California bighorn sheep in the WSA.

Livestock Management Actions

Livestock use would remain at the current estimated use level of approximately 1,109 AUMs within the WSA. The season of use would remain from April 16 to June 15.

Two springs would be developed to make forage available for 200 AUMs of existing use or the 200 AUMs of forage would be provided in areas outside the WSA.

Vehicle use for livestock management and maintenance of 6 miles of fence, 4 developed springs, 6reservoirs and 0.12 mile of pipeline would continue on 7 miles of ways and 5 miles of dead-end roads.

The ways would continue to be used for livestock management and maintenance. The three irrigation ditches will be maintained as frequently as required.

Recreation Management Actions

Vehicle use would continue to be limited to existing roads and ways under the current off-highway vehicle use designation.

Current recreational use is estimated to be 100 visitor days per year. Most recreationists would continue to use motorized vehicles for access using existing roads and ways.

Summary

Table 1 summarizes the projected management actions under each alternative. Table 2 summarizes the environmental consequences of each alternative.

3. Affected Environment

This section discusses only those activities or resources which influence the character of the study area, or that may be affected by the alternatives.

Wilderness Values

Naturalness

The Red Mountain WSA appears to be in a somewhat natural condition. Generally, the developments are scattered, screened by topography, and can be seen from only small, localized areas.

Unnatural features in the WSA include 6 reservoirs, 4 developed springs, 3 ditches totaling about 2 miles, 0.12-mile pipeline with a trough, about 6 miles of fences, a 680-acre crested wheatgrass seeding, the remains of a small cabin and ways totaling about 7 miles.

Approximately 13 percent of the study area is influenced by these features.

Three ways and the three irrigation ditches occur in the flat lowland area on the west; they are overgrown and visible only in their immediate vicinity.

The crested wheatgrass seeding is located in the northern portion of the WSA and is not substantially noticeable because it is overgrown with sagebrush; however, due to its size (680 acres), it influences about five percent of the WSA.

The seeding can be seen from adjacent hills to the east and south. From the top of Red Mountain, it is visible in the distance. A larger portion, approximately 3,000 acres, of this seeding outside the WSA may be maintained or reseeded and would be visible within the WSA.

Topography screens the reservoirs, spring developments, ways and fences in the eastern two-thirds of the area. The pipeline, trough, cabin remains and way in Red Mountain Creek drainage are visible from the higher points above each development. Three of the six reservoirs are very small. Generally, the ways and irrigation ditches lie adjacent to or in drainages, are partially screened by the curves in the drainages and by sagebrush vegetation, and can only be seen from high hills above the drainage itself. The fences are visible only in their immediate vicinity.

Outside sights and sounds which influence the study area are not substantial. The primary source of outside sights and sounds are the boundary roads and the three dead-end roads. From higher elevations within the WSA, distant ranching activities can also be seen, as can irrigated fields to the west in Pueblo Valley and a large portion of an old crested wheatgrass seeding.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

Opportunities for solitude in the Red Mountain WSA are outstanding. These opportunities are enhanced by the area's size, configuration and diverse topography, particularly Red Mountain, the numerous ridges and rolling hills, and the four major drainages with side drainages. There is limited vegetative screening to enhance opportunities for solitude. Trees grow around the springs within the WSA, but are not sufficient to provide screening.

Red Mountain WSA has outstanding opportunities for hiking and sightseeing. The major attraction for day hiking is Red Mountain and the ridgeline extending southeast for about 2 miles. Portions of four intermittent drainages lie within the WSA. These drainages are Oreanna Creek, Red Mountain Creek, Dry Creek and No Name Creek. The latter three drainages provide additional hiking routes as does the ridgeline north of No Name Creek.

There are outstanding opportunities for sightseeing and photography. These are associated with viewing areas outside of the WSA. From the top of Red Mountain and the ridge south of the summit, the view includes Steens Mountain to the north, Pueblo Valley and Pueblo Mountains to the west, and the mountains of northern Nevada to the south.

There are fair opportunities for other activities such as hunting, but they are not outstanding.

Special Features

Wildlife is a special wilderness feature in the WSA because the area contains crucial deer and antelope winter range. Deer winter range occurs in the extreme western lowlands, in the southwest portion near No Name Creek and in the hills above Cottonwood Creek. The northwest portion of the WSA provides antelope winter range (see Map 5).

Diversity in National Wilderness Preservation System (NWPS)

According to the Bailey-Kuchler system of classifying ecosystems, the study area is in the Intermountain Sagebrush Province. The potential natural vegetation is sagebrush-steppe or saltbush-greasewood communities.

Seven ecosystems listed in the Basin and Range section of the Oregon Natural Heritage Plan (ONHP) occur in Red Mountain WSA: big sagebrush/bluebunch wheatgrass, big sagebrush/Idaho fescue, big sagebrush-bitterbrush/Idaho fescue, low sagebrush/Idaho fescue, low sagebrush/Sandberg's bluegrass, bitterbrush-sagebrush/snowberry on Trout Creek Mountains, and shadscale-spiny hopsage-budsage community complex. Three-tip sagebrush/Idaho fescue is a notable ecosystem in the WSA but is not listed in the ONHP.

The study area is within five hours' driving time of two standard metropolitan statistical areas with populations over 100,000: Boise, Idaho and Reno, Nevada.

Energy and Mineral Development

Extensive geological surveys/investigations and exploration for minerals have not been performed. Only generalized geological information is available. The geology, energy and mineral resources of the Red Mountain WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, correlating rock units in the WSA with similar environments in areas known to contain mineral resources and by evaluating a geochemical sampling program conducted by BLM. Technical details of the evaluation are in a mineral resources assessment report, "Pueblo Valley Geologic Resource Area (GRA), Harney County Oregon," prepared by TERRADATA (a consulting firm under contract with BLM) and in a BLM report on Fields geologic resource areas.

The WSA is within the Pueblo Valley GRA which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level). A description of the rating system is provided in the Statewide EIS volume.

Table 3 shows the energy and mineral potential classifications for the WSA. Map 4 shows where energy and mineral resources have moderate or high potential for occurrence in the WSA.

Energy Resources

The area has a low potential for the occurrence of oil and gas and geothermal resources. As of October 16, 1987, the area contained no oil and gas or geothermal leases.

Mineral Resources

The entire WSA has a moderate potential for the occurrence of metals because the volcanic rocks present belong to the same geologic formation in which mercury, copper and gold occurrences are found in the Alvord Peak WSA (OR-2-83). Mercury is a strategic and critical mineral; but there are no known developable deposits of strategic and critical minerals in the WSA. The area did not contain any mining claims as of October 16, 1987.

The surface rocks of the WSA are Tertiary volcanic rocks consisting mainly of basalt, andesite and rhyolite flows with minor tuffs and tuffaceous sandstone and siltstone, ashy diatomite and conglomerate and Quarternary deposits of unconsolidated sand, silt and gravel.

Ashy diatomite occurs in sedimentary rocks exposed in the western part of the WSA; there is moderate potential for occurrence for higher quality diatomite deposits in these same rocks. The sedimentary formation that contains diatomite deposits in Mahogany Ridge WSA (OR-2-77) also occurs along the southeast edge of this WSA, but no significant diatomite deposits have been reported here.

Vegetation

The most extensive community in the Red Mountain WSA is the big sagebrush/bunchgrass community. Idaho fescue is dominant on north slopes and bitterbrush is co-dominant with sagebrush around Red Mountain. The estimated ecological status is mid-seral at the lower elevations and on the areas without much slope. The steeper slopes are estimated to be mid- to late seral. The potential natural community species are big sagebrush, bluebunch wheatgrass, Idaho fescue on the north slopes and bitterbrush.

A low sagebrush/bunchgrass community occurs on the slopes with shallow soils. The estimated ecological status is mid- to late seral. The potential natural community species are Idaho fescue and low sagebrush.

A three-tip sagebrush community occurs on small north-facing slopes throughout the study area. The estimated ecological status is mid-seral. The potential natural community contains Idaho fescue, Cusick bluegrass, Sandberg's bluegrass and three-tip sagebrush.

The alluvial fans on the western side of the study area support a community dominated by shadscale and budsage. The estimated ecological status is mid-seral. The potential natural community species are Indian ricegrass, squirreltail, budsage and shadscale.

The vegetative composition and ecological status in the WSA is currently in mid- to late seral stage overall and the trend is static in this portion of the Trout Creek Mountain allotment. An exception to this is the immediate vicinity of two ephemeral springs where approximately two acres of vegetation have been severely disturbed by livestock trampling in wet years.

Wildlife

The WSA provides winter habitat for large numbers of mule deer in the areas north of Cottonwood Creek on the lower slopes west of Red Mountain. Deer use occurs during the summer months along the eastern edge of the study area where water is well distributed and thermal cover is adequate.

Antelope winter at lower elevations in the northwestern part of the WSA. Most of the summer antelope use occurs near Holloway Reservoir and on low sagebrush flats in the southeastern edge of the study area.

Small mammals common to the low elevation valley edge include antelope ground squirrels, black-tailed jackrabbits and kangaroo mice. Bushy-tailed wood rats, canyon mice and small-footed myotis (bat) inhabit the rocky uplands. Coyotes are common throughout the WSA.

Reptiles found throughout the WSA are bullsnake, western rattlesnake and Great Basin whiptail lizard.

Kit fox, which is on the ODFW's List of Threatened or Endangered Wildlife, may occur along the western edge of the area where there is suitable habitat.

Sage grouse, a candidate for Federal listing as threatened or endangered, nest in upper elevations of the WSA and winter at lower elevations. Chukar are abundant along the drainages. Valley quail are abundant along Cottonwood Creek, but range onto uplands in the WSA.

Songbirds include those common to the lower elevations of the Pueblo Valley, such as horned lark, western kingbird and lark sparrow. Species found along canyons and uplands are canyon wren, rock wren and cliff swallow. Raptors nest on the large cliff faces near Red Mountain. Golden eagles, American kestrels, prairie falcons and great horned owls nest in the WSA.

Watershed

This WSA contains no perennial streams. There are four intermittent streams totaling about 23 miles in the study area. Those streams are: Oreanna Creek, Red Mountain Creek, Dry Creek and No Name Creek. There are no serious watershed problems associated with those streams.

Livestock Grazing

The WSA is located entirely within the Trout Creek Mountain allotment. Current estimated livestock use is 1,109 AUMs and the season of use is April 16 to June 15. Currently all public lands in the WSA are permitted for livestock grazing. Existing range improvements include 6 miles of fence, 4 developed springs, 6 reservoirs, 0.12-mile of pipeline and 1 trough, 3 irrigation ditches totaling approximately 3 miles, and an overgrown 680-acre crested wheatgrass seeding.

Seven livestock operators use motor vehicles on ways approximately 10 times per year for fence, developed spring and reservoir inspection and maintenance, and to check on livestock, spread salt and maintain irrigation ditches.

Preliminary data from current rangeland monitoring show that there is a 200 AUM shortage of livestock forage in the Trout Creek Mountain allotment portion of the WSA.

Recreation Use

Recreation use in the Red Mountain WSA is primarily oriented toward hunting. Mule deer, antelope and upland game birds are the most commonly-hunted game species.

Hunting for chukar and deer is fair, because populations are not high. It is estimated that deer hunting accounts for moderate visitor use while chukar hunting accounts for low visitor use. Antelope populations are even lower than deer populations, and antelope hunters account for low visitor use.

Hunting is most often associated with vehicles. The 5 miles of dead-end roads and the 7 miles of ways provide vehicular access throughout the WSA.

The study area currently receives very little primitive recreation use not associated with hunting. Recreational use is estimated to be 100 visitor days per year.

Local Personal Income

Livestock use at the current level of 1,109 AUMs and recreation use totaling 100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $13,308 for livestock grazing and $1,200 related to recreation use of the WSA, for an overall total of $14,508. The Statewide EIS volume discusses the term local personal income and how income figures have been derived.

4. Environmental Consequences

Introduction

This section discusses the environmental consequences of implementing each of the alternatives. Resources and activities not significantly affected by any of the alternatives are not discussed. The Statewide volume discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness: 16,215 acres
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

All of the WSA would be designated wilderness, and wilderness values within the entire 16,215 acres would be protected by legislative mandate. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. Special features, including crucial antelope and deer winter range, would be protected.

Naturalness

The naturalness of the area's upland peaks, rolling hills and scenic vistas is slightly enhanced by the closure of 7 miles of ways, allowing the ways to naturally revegetate and return to an unbroken sagebrush and grass landscape. The potential 200-AUM decrease also would somewhat enhance naturalness by less apparent grazing activities and effects.

The maintenance of 4 developed springs, 6 reservoirs, 0.12-mile of pipeline and 1 trough would require heavy equipment access on 7 miles of ways every 10 years to maintain the springs and reservoirs and every 5 years for the pipelines. This infrequent amount of use would not prevent the ways from revegetating. Maintenance of the three irrigation ditches, totaling about 2 miles, would require motorized access on 7 miles of ways as frequently as necessary, but not to such an extent that the ways would be prevented from revegetating to a more natural condition.

The old 680-acre crested wheatgrass seeding within the northern portion of the WSA influences about five percent of the study area, although it is overgrown and substantially unnoticeable. It can be seen from elevated uplands within the WSA, as can a larger portion of approximately 3,000 acres that lies outside the study area, where reseeding may occur.

Solitude

Opportunities for solitude provided by the area's size, configuration, diverse topography and drainages would improve slightly with the reduced vehicle use caused by the closure of 7 miles of ways.

Maintenance of 4 developed springs and 6 reservoirs with heavy mechanized equipment every 10 years, and every five years for the 0.12-mile of pipeline, would minor local impairment of solitude as would maintenance of the three irrigation ditches.

Primitive and Unconfined Recreation

Closure of 7 miles of ways to motorized vehicle use would increase the opportunities for participating in primitive and unconfined recreation activities such as day hiking, wildlife observation, sightseeing and photography within the study area. The quality of primitive hunting opportunities would improve with closure and natural revegetation of the ways. A more natural, primitive and wild setting would be provided.

The 200-AUM decrease would slightly enhance these recreation experiences by increasing the quality and frequency of sighting wildlife and allowing for a more natural, primitive and wild setting, due to the slightly reduced competition for forage and cover between wildlife species and livestock.

Special Features

Eliminating motorized vehicle use on the 7 miles of ways would reduce potential impacts to the area's special features. These impacts include minor seasonal disturbance to wildlife that inhabit the study area.

Conclusion: Wilderness designation of the entire 16,215 acres within Red Mountain WSA would result in the protection of the existing wilderness values and probable enhancement of those values.

Impacts on Energy and Mineral Development

Wilderness designation would close 15,180 acres within the WSA to mineral entry. The 1,035 acres of split-estate lands and the 80-acre parcel of private land would remain open to energy and mineral exploration and development.

Energy Development

Energy exploration and development would be precluded on 15,180 acres of public land within the WSA. However, no oil and gas or geothermal exploration and development is projected in the area due to the low potential for the occurrence of these resources.

Conclusion: No impact on energy development is expected.

Mineral Development

Within the area designated wilderness, substantial exploration or mineral development cannot be projected at this time with any certainty due to a combination of the lack of availability of extensive geological surveys and investigations and historical low level of mineral exploration and development in the region.

Minerals that have a moderate potential for occurrence include mercury and diatomite (see Table 3). Due to a lack of geologic evidence there are no known deposits of sufficiently large ore bodies that would merit development. No claims are located within the WSA. Further there is a producing diatomite mine in the region, with ample reserves. Due to these factors, and the presence of a thick volcanic covering on the surface, only casual exploration, without development is projected

Conclusion: No impact on mineral development is expected.

Impacts on Vegetation

The WSA's vegetative composition and the ecological status, which is currently in mid- to late seral stage overall, would remain static. Although a reduction of 200 AUMs is projected, the current grazing patterns would not change. The two acres of severely disturbed vegetation at two ephemeral springs would remain static.

The closure of 7 miles of ways would allow them to naturally revegetate with annual forbs and grasses within approximately two growing seasons.

Conclusion: The 7 miles of ways totaling seven acres would revegetate. Overall vegetative trend would remain static.

Impacts on Wildlife

Wildlife habitat for a summer population of 100 deer, and 30 antelope and for a winter population of 500 deer and 30 antelope, would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives, including the maintenance of habitat for California bighorn sheep. The proposed release of California bighorn sheep would occur as projected.

The closure of 7 miles of ways would have little impact on big game wildlife species due to the light vehicle use. Less disturbance to chukar and valley quail from hunters would occur due to the closure of ways.

Conclusion: Wildlife habitat and populations would be maintained on 16,215 acres designated wilderness. The proposed release of California bighorn sheep would occur as projected.

Impacts on Livestock Grazing

The development of two springs, designed to increase the utilization of available forage not presently grazed by livestock and reduce grazing pressure on some of the more intensively utilized areas, would be precluded under this alternative due to recurring maintenance activities that require access by vehicles. There would be a projected reduction in livestock grazing use in the Trout Creek Mountain allotment of 200 AUMs. This reduction would result in a total livestock grazing use of 909 AUMs in the WSA. This reduction is necessary due to a shortage of available forage in the allotment. The season of use would remain from April 16 to June 15.

Vehicle use for livestock management and facility inspection and maintenance on the existing 7 miles of ways would be precluded. Annual inspection and maintenance of fences not accessible by open roads would be done on foot or by the use of riding and pack animals. This would result in some inconvenience and a slight additional expense to seven livestock operators. Heavy equipment may be used once every 10 years to maintain six reservoirs and four developed springs, and every 5 years to maintain 0.12-mile of pipeline and a trough. Maintenance will be performed on three irrigation ditches as frequently as required, by means of heavy mechanized equipment and motorized transportation.

Conclusion: Livestock use would be at a reduced level of 909 AUMs. Vehicle use for routine livestock management on the 7 miles of ways would be precluded, resulting in some inconvenience and additional expense to operators.

Impacts on Recreation Use

Except for the 5 miles of dead-end roads that would remain open under the all wilderness alternative, the entire 16,215 acres of the WSA would be closed to motorized vehicle use, including 7 miles of ways. This closure would reduce vehicle-oriented recreation in the WSA.

Primitive recreation use would be expected to increase slightly. Vehicle-oriented recreation is expected to be displaced into other areas or to be partially substituted by primitive recreation. Some present vehicle-oriented recreationists, primarily hunters, would continue to visit the WSA, traveling by foot or horseback. It is estimated that reductions in hunting use would be minor due to continued access opportunities on the 5 miles of dead-end roads. Projected use patterns indicate that the current level of 100 visitor days per year would not change significantly over time.

Conclusion: The area's current recreation use level of 100 visitor days per year would not be substantially changed over time.

Impacts on Local Personal Income

Livestock grazing would decrease by 200 AUMs. Overall recreation use would remain at 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $2,400 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $2,000.

Enhanced Wilderness

Recommended suitable for wilderness: 16,295 acres (assuming acquisition of 80 acres of private land)

Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

The enhanced wilderness alternative would add 16,295 acres to the NWPS, with acquisition of the 80 acres of private land and the acquisition of the mineral estate of 1,035 acres of split-estate lands. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved over the entire area. Special features, including crucial antelope and deer winter range, would be protected.

Naturalness

The enhanced wilderness alternative would augment the overall naturalness of the area by closing the 5 miles of dead-end roads and 7 miles of ways in the WSA. The existing roads and ways would be allowed to revegetate naturally and would become less visible within the study area, thus improving overall naturalness by providing an unbroken sagebrush and grass landscape.

Acquisition of 80 acres of private land and 1,035 acres of split-estate within the study area would prevent potential disturbance from mineral entry and exploration and the need for access to these scattered parcels, thus preserving the existing naturalness of the area.

The maintenance of four developed springs, six reservoirs and 0.12-mile of pipeline and a trough would require heavy equipment access on 7 miles of ways every 10 years for the springs and reservoirs and every five years for the pipeline. This infrequent amount of use would not prevent the ways from revegetating. Maintenance of three irrigation ditches totaling about 2 miles, would require access on 7 miles of ways as frequently as necessary, but not to such an extent that the ways would be prevented from revegetating to a more natural condition.

The old 680-acre crested wheatgrass seeding within the northern portion of the WSA influences about five percent of the study area, although it is overgrown and substantially unnoticeable. It can be seen from elevated uplands within the WSA, as can a larger portion of approximately 3,000 acres that lies outside the study area where reseeding may occur.

Solitude

This alternative would enhance the opportunities for solitude in a manner similar to the all wilderness alternative, except that solitude would be further enhanced by closure of the 5 miles of dead-end roads in the WSA and elimination of motorized vehicle use. Acquisition of 80 acres of private land and the mineral estate of 1,035 acre of split-estate land would preclude mineral entry and exploration and would increase opportunities for experiencing solitude.

Maintenance of four developed springs and six reservoirs with heavy mechanized equipment every 10 years, and every 5 years for the 0.12 mile of pipeline, would cause local impairment of solitude, as would maintenance of the three irrigation ditches.

Primitive and Unconfined Recreation

Under the enhanced wilderness alternative, opportunities for primitive recreation would be maintained or improved. Closure of the three dead-end roads, totaling 5 miles, and 7 miles of ways would essentially eliminate vehicle use within the WSA, resulting in a more primitive setting for nonmotorized wilderness recreational pursuits.

In addition, acquisition of the 80 acres of private land and 1,035 acres of mineral estate would prevent mineral entry and exploration and would further enhance and preserve a natural setting for primitive recreational activities.

Special Features

Eliminating motorized vehicle use on the 5 miles of dead-end roads, in addition to the 7 miles of ways, would reduce the potential for impacts to special features. These impacts include minor seasonal disturbances to wildlife that inhabit the study area.

Conclusion: Wilderness designation of the 16,295 acres (assuming acquisition of 80 acres of private land) would result in the protection of existing wilderness values and enhancement of those values. Acquisition of mineral estate would further enhance the total area by preserving wilderness values on all lands within wilderness boundaries.

Impacts on Energy and Mineral Development

Under the enhanced wilderness alternative, 15,180 acres, plus an additional 1,115 acres of private land and mineral estate, assuming acquisition, would be closed to mineral entry.

Energy Development

Energy exploration would be precluded on 16,295 acres, assuming acquisition of the private and mineral estate lands. No oil and gas or geothermal exploration and development is projected in the area due to the low potential for the occurrence of these resources in the area.

Conclusion: No impact on energy development is expected.

Mineral Development

Within the area designated as wilderness, substantial exploration or mineral development cannot be projected at this time with any certainty due to a combination of the lack of availability of extensive geological surveys and investigations and historical low level of mineral exploration and development in the region.

Minerals that have a moderate potential for occurrence include mercury and diatomite (see Table 3). Due to a lack of geologic evidence there are no known deposits of sufficiently large ore bodies that would merit development. No claims are located within the WSA. Further there is a producing diatomite mine in the region, with ample reserves. Due to these factors, and the presence of a thick volcanic covering on the surface, only casual exploration, without development is projected

Conclusion: No impact on mineral development is expected.

Impacts on Vegetation

The WSA's vegetative composition and ecological status, which is currently in mid- to late seral overall, would remain static. Although a 200-AUM reduction in livestock use is projected, current grazing patterns would not change. The two acres of severely-disturbed vegetation at two ephemeral springs would remain static.

The closure of 5 miles of dead-end roads and 7 miles of ways would allow them to naturally revegetate with annual forbs and grasses within approximately two growing seasons.

Conclusion: The 5 miles of dead-end roads and 7 miles of ways totaling 19 acres would revegetate. Overall vegetation condition would remain the same.

Impacts on Wildlife

Wildlife habitat for a summer population of 100 deer and 30 antelope and a winter population of 500 deer and 30 antelope would be maintained under this alternative. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives, including the maintenance of habitat for California bighorn sheep. The proposed release of California bighorn sheep would occur as projected.

Acquisition of 80 acres of private land would include a spring area used by deer, chukar, quail and nongame species.

The closure of 7 miles of ways and 5 miles of dead-end roads would have little impact on most big game wildlife species due to the light vehicle use. Less disturbance to chukar and valley quail would occur due to the closure of ways. Closing the way and dead-end road that lead to Red Mountain would lessen the impacts to bighorn sheep upon their release into the area as projected.

Conclusion: Wildlife habitat and populations would be maintained on 16,295 acres designated wilderness. The proposed release of California bighorn sheep would occur as projected.

Impacts on Livestock Grazing

The development of two springs, designed to increase the utilization of available forage not presently grazed by livestock and reduce grazing pressure on some of the more intensively-utilized areas, would be precluded under this alternative due to recurring maintenance activities that require access by vehicles. There would be a projected reduction in livestock grazing use in the Trout Creek Mountains allotment of 200 AUMs. This reduction would result in a total livestock grazing use of 909 AUMs in the WSA. This reduction is necessary due to a shortage of available forage in the allotment. The season of use would remain from April 16 to June 15.

Vehicle use for livestock management and facility inspection and maintenance on existing 7 miles of ways and 5 miles of dead-end roads would be precluded. This would result in some inconvenience and slight additional expense to seven livestock operators. Annual inspection and maintenance of fences would be done on foot or by the use of riding and pack animals. Heavy equipment may be used once every 10 years to maintain six reservoirs and four developed springs, and every five years to maintain 0.12 mile of pipeline.

Conclusion: Livestock use would be at a reduced level of 909 AUMs. Vehicle use for routine livestock management on the 7 miles of ways and 5 miles of dead-end roads would be precluded, resulting in some inconvenience and additional expense to operators.

Impacts on Recreation Use

Motorized vehicle use would be precluded on 16,295 acres, including 5 miles of dead-end roads and 7 miles of ways. This closure would eliminate all motorized vehicle use in the area.

The quality of primitive recreation would be expected to improve and such use would increase slightly by closure of the dead-end roads and ways. Vehicle-oriented recreation would be displaced into other areas and to be partially substituted by primitive recreation. Some present vehicle-oriented recreationists, primarily hunters, may continue to use the WSA by traveling on foot or horseback. Others would find alternative areas where vehicle use is permitted. Primitive recreation activities are not expected to increase to a point where they offset the reduction in vehicle-oriented recreation. Projected use patterns indicate that the current level of 100 visitor days per year would not change significantly over time.

Conclusion: The area's current recreation use level of 100 visitor days per year would not be substantially changed over time.

Impacts on Local Personal Income

Livestock grazing would decrease by 200 AUMs. Overall recreation use would remain at 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $2,400 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $2,000.

No Wilderness/No Action (Proposed Action)

Recommended suitable for wilderness: 0 acres
Recommended nonsuitable for wilderness: 16,215 acres

Impacts on Wilderness Values

Under the no wilderness alternative, the entire 16,215 acres of public land would not be designated wilderness, and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation and the area's special features, including crucial antelope and deer winter range, would be subject to the effects of projected management actions, including two proposed spring developments, the potential exploration and development of energy and mineral resources and continued vehicle use for recreation and range management activities in the area.

Naturalness

Projected actions, including range improvements, would be allowed under the no wilderness alternative. These activities would affect naturalness to some degree by disturbing native vegetation.

Continued vehicle use on the 5 miles of dead-end roads and 7 miles of ways would continue, but not increase, the direct and indirect visual impacts of vehicle tracks upon naturalness of the WSA.

Construction of the projected livestock developments, including two spring developments with source and overflow exclosure and the accompanying changes in livestock use patterns, would directly disturb two acres and visually influence wilderness values on 52 acres in the southeastern portion of the WSA.

The old 680-acre crested wheatgrass seeding within the northern portion of the WSA influences about five percent of the study area, although it is overgrown and substantially unnoticeable. It can be seen from elevated uplands within the WSA, as can a larger portion of approximately 3,000 acres that lies outside the study area where reseeding may occur.

Solitude

Continued vehicle use on 7 miles of existing ways and 5 miles of existing dead-end roads and human activity associated with construction and maintenance of range improvement construction would cause repeated, but short-term local impairment of solitude opportunities adjacent to these activities. Other existing solitude opportunities in the rest of the area would remain unchanged.

Primitive and Unconfined Recreation

Under this alternative, opportunities for primitive recreation would be reduced by the development of two springs as range improvement projects and continued vehicle use on existing ways and roads.

Such use would continue to intrude upon primitive, nonmotorized recreation opportunities in the vicinity of the dead-end roads and ways in the WSA.

Special Features

The crucial antelope and deer winter range would be subject to disturbance from the development of other resources. Mitigation measures could minimize or eliminate some of these impacts.

Conclusion: Projected resource activities and developments would both directly and indirectly impair wilderness values over approximately 50 acres of the WSA, with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

The entire area would be open to mineral exploration and development.

Energy Development

No oil and gas or geothermal exploration or development is projected in the area due to the low potential for the occurrence of sufficient resources.

Conclusion: There would be no impact on energy development.

Mineral Development

Within this area, substantial exploration or mineral development can not be projected at this time due to the combination of a lack of availability of extensive geological surveys and investigations and the historical low-level mineral exploration and development in the region.

Minerals that have a moderate potential for occurrence include mercury and diatomite (see Table 3). Due to a lack of geologic evidence there are no known deposits of sufficiently large ore bodies that would merit development. No claims are located within the WSA. Further, there is a producing diatomite mine in the region with ample reserves. Due to these factors, and the presence of a thick volcanic covering on the surface, only casual exploration without development is projected

Conclusion: There would be no impact on mineral exploration or development.

Impacts on Vegetation

The 7 miles of existing ways and 5 miles of existing dead-end roads would not revegetate due to continued use by vehicles.

The two spring developments, with fenced sources and overflows (exclosures) would disturb two acres of vegetation during construction in an area already severely disturbed by livestock trampling. Within these exclosures, vegetative cover would increase and the ecological status would move towards its potential natural community. These developments would enhance watershed resources by protecting spring-side riparian areas from intensive livestock use and alleviate a shortage of available forage by altering grazing patterns, allowing overall vegetation recovery within the study area by a more even distribution of grazing in the WSA.

Conclusion: Range developments would result in a direct loss of vegetation on two acres over the short term. Overall vegetation would recover due to changes in grazing livestock patterns brought about by range resource developments.

Impacts on Wildlife

Wildlife habitat for a summer population of 100 deer and 30 antelope and for a winter population of 500 deer and 30 antelope would continue to be met. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives, including bighorn sheep.

Conclusion: Wildlife habitat and populations would be maintained.

Impacts on Livestock Grazing

Livestock grazing use would be sustained at the current level of approximately 1,109 AUMs within the Trout Creek Mountain portion of the allotment in the WSA. The season of use would remain from April 16 to June 15.

Vehicle use for livestock management and facility inspection and maintenance would continue on the 7 miles of ways and 5 miles of dead-end roads. The two new spring developments would exclude livestock from the water sources and overflows, and would provide clean water at the water troughs located away from the spring sources and drainages.

Conclusion: Livestock grazing use would remain at 1,109 AUMs and vehicle use for management activities would continue on ways and dead-end roads.

Impacts on Recreation Use

Motorized recreation use would continue within the WSA, limited to the existing 7 miles of ways and 5 miles of dead-end roads, under the current off-highway vehicle use designation.

Primitive recreation opportunities would decrease slightly with the proposed spring developments which allow the current livestock use of 1,109 AUMs to be more evenly distributed throughout the WSA by expanding to less utilized areas. Projected use patterns indicate that the current level of 100 visitor days per year would remain the same over time.

Conclusion: The area's current recreation use level of 100 visitor days per year, would not be substantially changed over time.

Impacts on Local Personal Income

Livestock grazing would remain at 1,109 AUMs. Overall recreation use would remain at 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be no net change from the current level.

Conclusion: Annual local personal income generated from resource outputs in the WSA would remain at approximately $15,000.

Unavoidable Adverse Impacts of the Proposed Action

Under the Proposed Action (No Wilderness/No Action) continued motorized vehicle use along 7 miles of ways would locally impair wilderness values. The development of two springs, including expansion of livestock to areas with currently under-utilized forage, would locally impair wilderness values in the short term. Visually, approximately 50 acres would be adversely impacted under the Proposed Action.

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity

Under the Proposed Action, all short-term uses would continue and future development options would remain open including range improvements and mineral exploration and development. Long-term productivity of wilderness values would be directly lost on nine surface acres from the continued use of ways and additional spring exclosures; while improved vegetation, range and wildlife resources would result from the proposed spring developments. Approximately 2,100 acres would visually be affected, with further declines from other potential uses over the long term.

Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, nine surface acres of disturbance due to continued use of ways and two new spring developments would directly reduce wilderness values to a minor extent. Visually, approximately 50 acres would be affected.

5. Wilderness Manageability and Rationale for the Proposed Action

Manageability of the Area as Wilderness

The Red Mountain WSA is capable of being managed for its wilderness characteristics, although there are some potential manageability problems. Under the all wilderness alternative, the 80-acre parcel of private land and the split-estate land would be subject to the development of those minerals with moderate potential for occurrence (see Map 4 and Table 3), and this could create problems with the maintenance of wilderness values. However, no energy or mineral developments are projected. There would be problems with boundary identifications.

Under the enhanced wilderness alternative, the manageability of the WSA would be improved with the acquisition of the private inholding and the split-estate lands, and closure of the dead-end roads. There would be minor problems with boundary identification.

Rationale for the Selection of the Proposed Action

The No Wilderness/No Action alternative is the Proposed Action primarily because the area has limited high quality wilderness values, especially in its relative naturalness. Manageability is hampered by the imprint of human intrusions in approximately 13 percent of the area, as well as the lack of agency authority to manage energy or mineral development on approximately seven percent within the WSA. Overall human intrusions from within and outside the WSA influence the naturalness and pristine characteristics of the area's highest quality scenic values under each wilderness-oriented alternative. The benefits of retaining options for resource development and the need to use motorized vehicles in the area offset the benefits for preserving the area as wilderness. The No Wilderness/No Action proposed alternative would facilitate expanded management opportunities for range management and vegetative enhancement and the area would remain open to mineral and energy exploration.

6. Summary and Analysis of Public Comments

Following is a summary of public comments specific to the WSA concerning adequacy of the analysis in this appendix and responses to those comments. These comments were received both in writing and oral testimony at public hearings during the comment periods for the 1985 Draft EIS and the 1987 Supplement to the Draft EIS. Comments concerning the BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning statewide issues and analysis are addressed in the Statewide volume.

Comment: The boundary for the all wilderness alternative could be expanded beyond an established road because it is only a "way." **Response:** The area's northern boundary is formed by a combination of two BLM roads and an irrigation ditch and pipeline. Roads on the boundaries receive routine mechanical maintenance and were inventoried as "roads." These roads receive substantial use, and closure is not considered a viable alternative.

Comment: Protect kit fox habitat. **Response:** Habitat lies along the western edge of the WSA and no disturbance to this area would occur under any alternative. No actual kit fox sightings have ever been reported.

Comment: Combine WSA with Trout Creek Mountain Complex. **Response:** The enhanced alternative does not analyze combining this study area with the nearest other WSA (Mahogany Ridge, OR-2-77) in the Trout Creek Mountain Complex because of important access and land status conflicts. A road providing primary access for both the public (to private land, for livestock management, for hunting) and BLM use cannot be feasibly closed. Extensive private inholdings which lie along the western boundary of the other WSA would clearly hamper overall management, or require the acquisition of substantial private acreage. See Section 2, Description of the Alternatives, for the discussion on the enhanced alternative.

Table 1. Summary of Proposed Management Under Each Alternative, Red Mountain WSA (OR-2-78)

Proposed Management	All Wilderness	Enhanced Wilderness	No Wilderness/ No Action
Acres Designated as Wilderness	16,215	16,215	0
Acres Closed to ORVs by Wilderness Designation	16,215	16,215	0
Miles of Roads Closed	0	5	0
Miles of Ways Closed	7	7	0
Acres of Full Fee Estate Acquired[1]	0	80	0
Acres of Mineral Estate Acquired[2]	0	1,035	0
Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation	15,180	15,180	0
Structural Livestock Projects Developed: Springs (number)	0	0	2
Decreased Livestock Forage Allocation (AUMs)	200	200	0

[1] Upon acquisition, these additional lands would be incorporated into the wilderness area, closed to vehicle use, and withdrawn from mineral location and leasing.

[2] Upon acquisition of mineral estate, these lands would be withdrawn from mineral location and leasing.

Table 2. Summary of Environmental Consequences of Alternatives, Red Mountain WSA (OR-2-78)

Resource or Activity	All Wilderness	Enhanced Wilderness	No Wilderness/No Action (Proposed Action)
Wilderness Values	Wilderness designation of the entire 16,215 acres within Red Mountain WSA would result in the protection of the existing wilderness values and probable enhancement of those values.	Wilderness designation of 16,295 acres would result in the protection of existing wilderness values and enhancement of those values. Acquisition of mineral estate would further enhance the total area by preserving wilderness values on all lands within wilderness boundaries. (The designation of 16,295 acres assumes acquisition of 80 acres of private land.)	Projected resource activities and developments would both directly and indirectly impair wilderness values over 50 acres of the WSA, with further declines from other potential uses over the long term.
Energy and Mineral Development	No impact on energy or mineral development is expected.	No impact on energy or mineral development is expected.	No impact on energy or mineral development is expected.
Vegetation	The 7 miles of ways would revegetate. Overall vegetative trend would remain static.	The 5 miles of dead-end roads and 7 miles of ways would revegetate. Overall vegetation condition would remain the same.	Range developments would result in a direct loss of vegetation in 2 acres over the short term. Overall vegetation would recover due to changes in grazing livestock patterns brought about by range resource developments.
Wildlife	Wildlife habitat and populations would be maintained on 16,215 acres designated wilderness. The proposed release of California bighorn sheep would occur as projected.	Wildlife habitat and populations would be maintained on 16,295 acres designated wilderness. The proposed release of California bighorn sheep would occur as projected.	Wildlife habitat and populations would be maintained.
Livestock Grazing	Livestock use would be at a reduced level of 909 AUMs. Vehicle use for routine livestock management on the 7 miles of ways would be precluded, resulting in some inconvenience and addiitional expense to operators.	Livestock use would be at a reduced level of 909 AUMs. Vehicle use for routine livestock management on the 7 miles of ways ways and 5 miles of dead-end roads would be precluded, resulting in some inconvenience and additional expense to livestock operators.	Livestock grazing use would remain at 1,109 AUMs and vehicle use for management activities would continue on ways and dead-end roads.
Recreation Use	The area's current recreation use level of 100 visitor days per year, would not be substantially changed over time.	The area's current recreation use level of 100 visitor days per year, would not be substantially changed over time.	The area's current recreation use level of 100 visitor days per year would not be substantially changed over time.
Local Personal Income	Annual local personal income would decrease by approximately $2,000.	Annual local personal income would decrease by approximately $2,000.	Annual local personal income would remain at approximately $15,000.

Table 3. Classification of Energy and Mineral Potential, Red Mountain WSA (OR-2-78)

Commodity	Area	Level of Potential	Level of Certainty
Metals(mercury)	Entire WSA	M	B
Geothermal	Part of area (Not shown on map 4)	L	B
	Rest of WSA	O	D
Uranium/Thorium	Entire WSA	L	B
Coal	Entire WSA	O	C
Oil/Gas	Entire WSA	L	A
Tar Sands/Oil Shale	Entire WSA	O	C
Limestone	Entire WSA	O	C
Bentonite	Entire WSA	L	B
Diatomite	See map 4	M	C
	Rest of WSA	L	B
Zeolites	Entire WSA	L	A

Legend:

Level of Potential

O - No indication for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Moderate potential for accumulations of energy/mineral resource
H - High potential for accumulations of energy/mineral resource

Level of Certainty

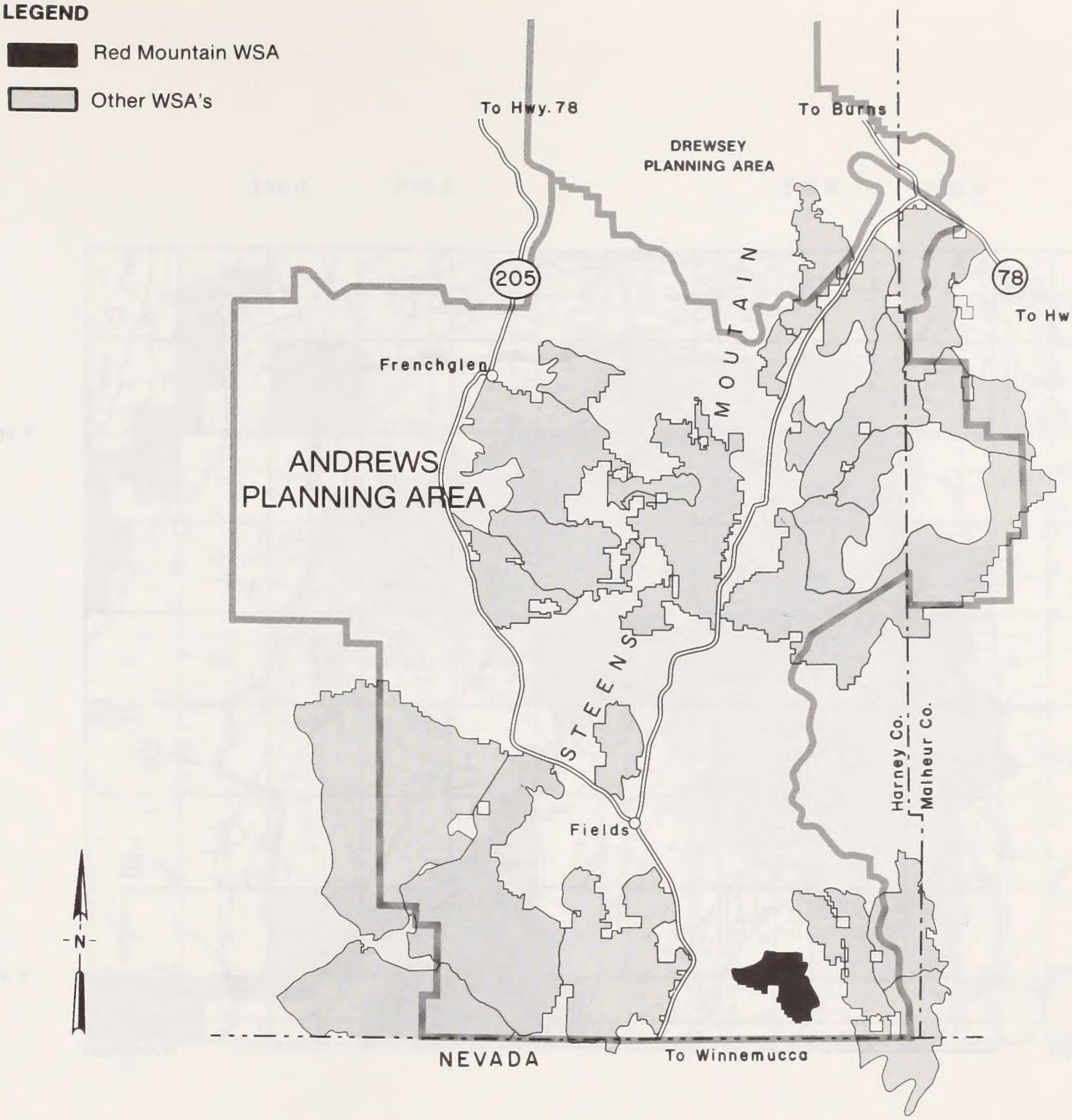
A - Insufficient data or no direct evidence
B - Indirect evidence available
C - Direct evidence but quantitatively minimal
D - Abundant direct and indirect evidence

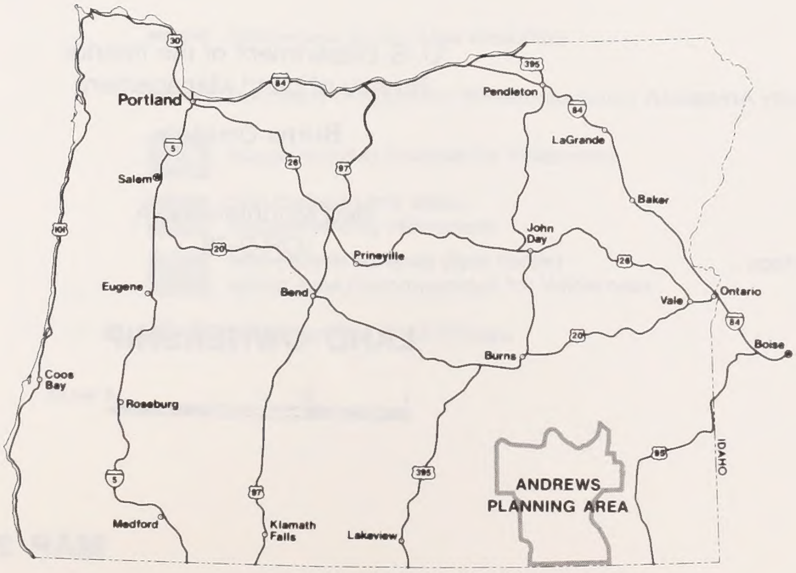
Table 4. Existing and Potential Livestock Use, Red Mountain WSA (OR-2-78)

Grazing Allotment	Licensed AUMs in Allotment	Period of Use	Current Percent of Allotment in WSA	Current Estimated Use in WSA (AUMs)
Trout Cr. Mtn. (No. 6015)	13,671	04/16-06/15	18	1,109

Table 5. Effects of Alternatives on Local Personal Income, Red Mountain WSA (OR-2-78) (1981 price levels)

Item	Unit of Measure	All Wilderness	Enhanced Wilderness	No Wilderness/ No Action
CHANGES IN RESOURCE OUTPUTS				
Livestock Grazing	AUMs	-200	-200	No change
Recreation Use	RVD	Negligible	Negligible	Negligible
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES				
Livestock Grazing	$	-2,400	-2,400	0
Recreation Use	$	0	0	0
Total	$	-2,400	-2,400	0





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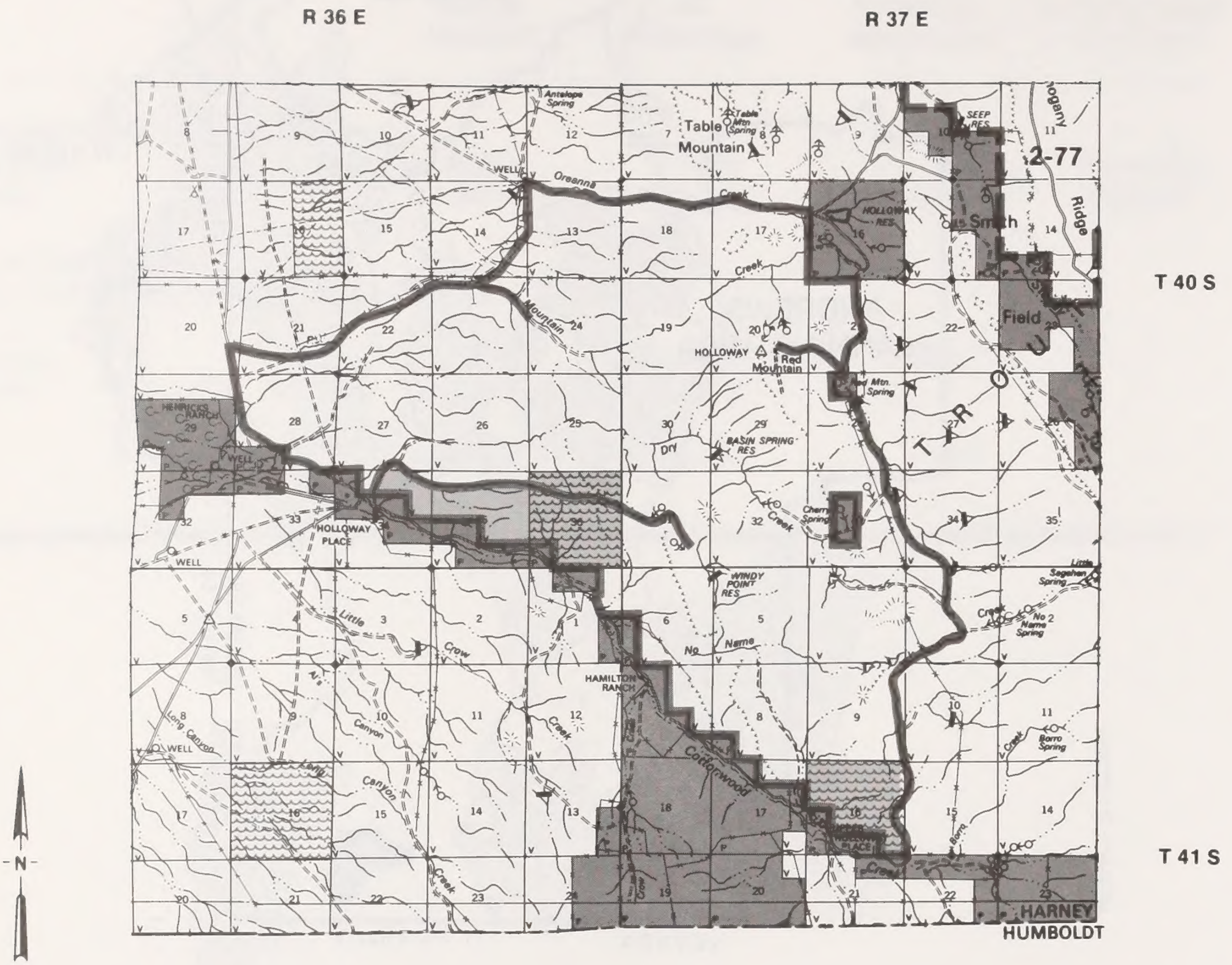
Burns District

Red Mountain WSA
OR-2-78

LOCATION MAP

10 0 10 MILES

MAP 1



LEGEND

▨ BLM Land Studied Under Section 202 of FLPMA (Other BLM Land in WSA Studied Under Section 603 of FLPMA)

━ Wilderness Study Area Boundary

╍ Boundary of Adjacent Wilderness Study Areas

☐ Bureau of Land Management

■ Private

▤ BLM Surface-State or Private Subsurface (Split Estate)

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Red Mountain WSA
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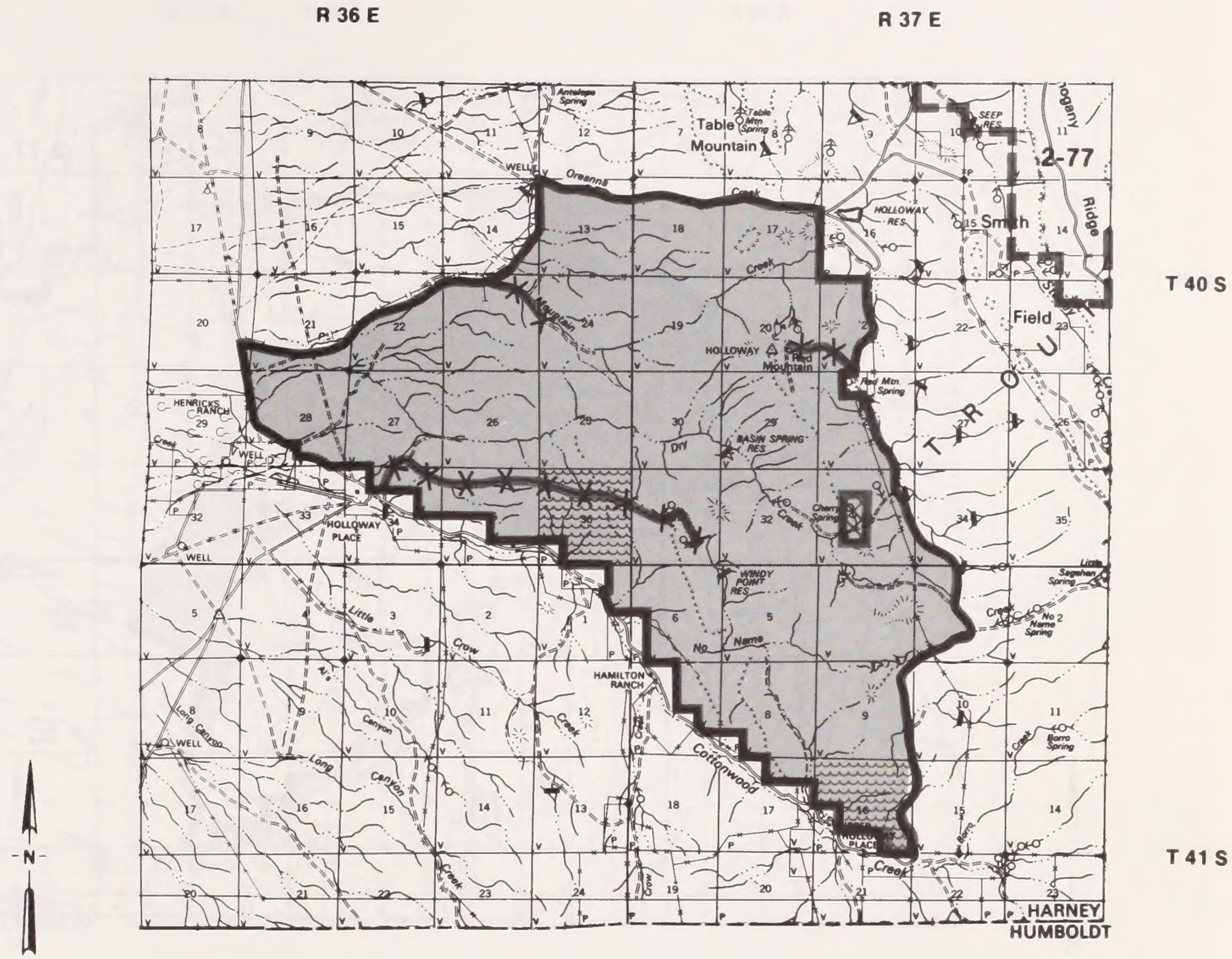
LAND OWNERSHIP

1 0 1 2 MILES

MAP 2



▬ Wilderness Study Area Boundary

▬ ▬ Boundary of Adjacent Wilderness Study Areas

▢ Recommended Suitable for Wilderness

▩ Non-Federal Land within Recommended Wilderness

▤ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness

✕—✕ Recommended Road Closure

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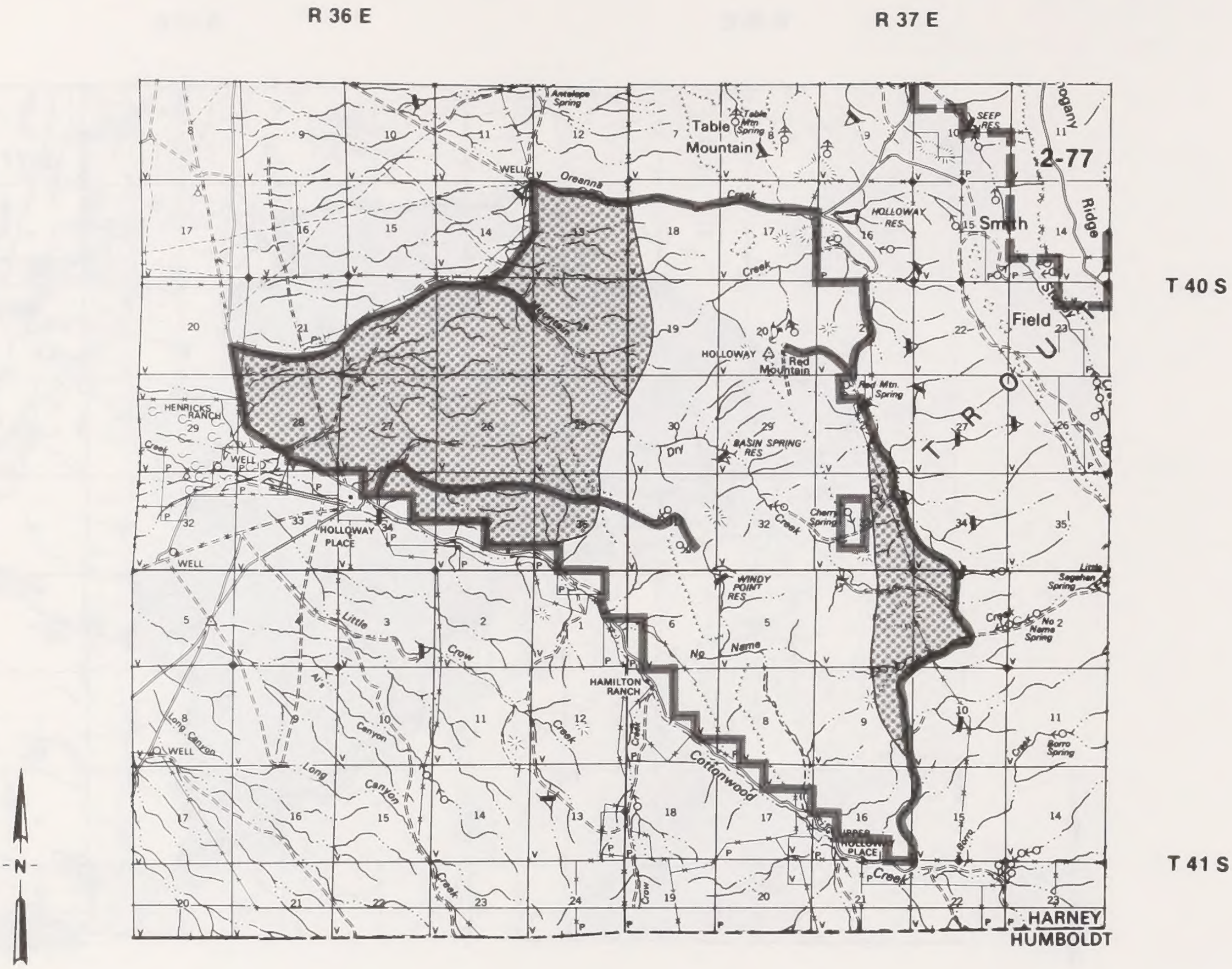
ENHANCED ALTERNATIVE

1 0 1 2 MILES

MAP 3



▨ **Moderate Potential (MC) for Diatomite**

Entire WSA:
Moderate Potential (MB) for Mercury

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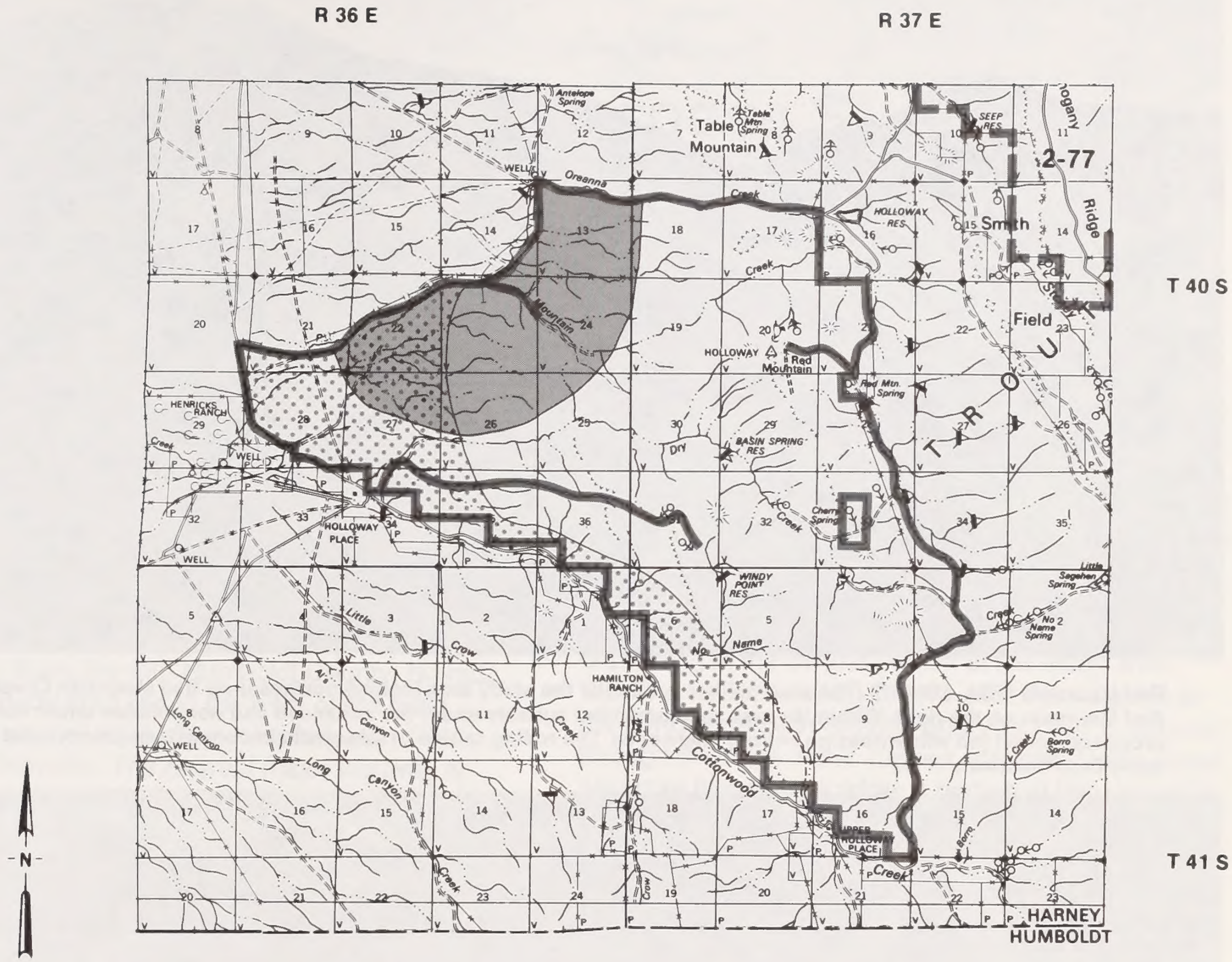
MODERATE OR HIGH POTENTIAL MINERAL OR ENERGY RESOURCES

MAP 4



░ Deer Winter Range

▨ Antelope Winter Range

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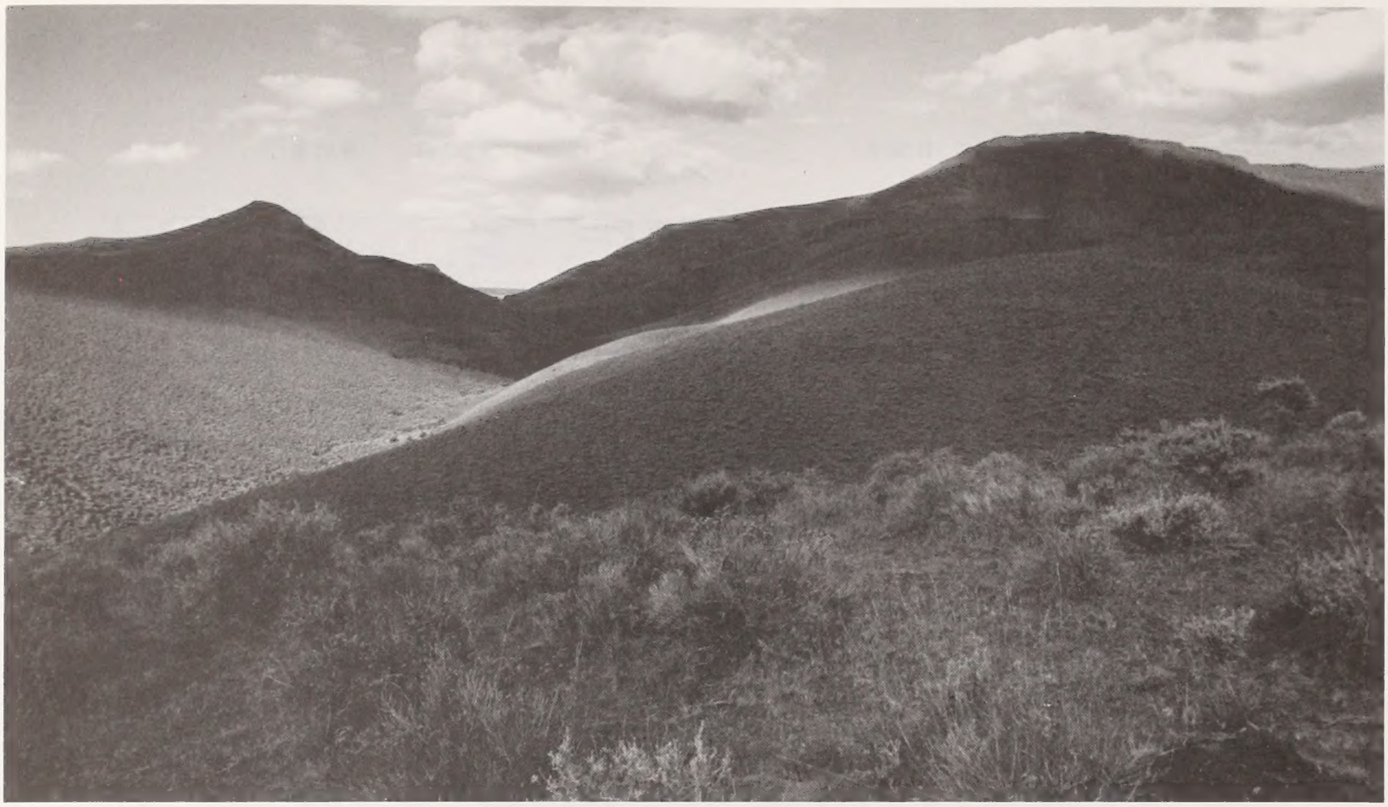
SPECIAL FEATURES

1 0 1 2 MILES

MAP 5



Red Mountain WSA, OR-2-78. The west central portion of the study area looking northeast up Red Mountain Creek with Red Mountain on the right. Within the area recommended suitable under the enhanced and nonsuitable under the proposed action (no wilderness/no action) alternative. The rolling terrain in this photo becomes less pronounced to the west. Date unknown.

Red Mountain WSA, OR-2-78. Looking north from a ridgeline just south of Dry Creek showing the steep western slope of Red Mountain (the highest point in the study area). The drainage in the immediate foreground is Dry Creek. Within the area recommended suitable under the enhanced and nonsuitable under the proposed aciton (no wilderness/no action) alternative. August 1983.

Appendix to the Wilderness Environmental Impact Statement for Oregon

Pueblo Mountains Wilderness Study Area (OR-2-81/NV-020-642)

1. Introduction

General Description of the Study Area

The Pueblo Mountains Wilderness Study Area (WSA) is located 96 miles south of Burns and 5 miles south of Fields, Oregon (see Map 1). Almost all of the area is within Harney County although a small portion crosses the State line into Humboldt County, Nevada. The entire study area lies to the west of the main north-south county road which runs between Fields and Denio, Nevada. The nearest major highway is Nevada State Highway 140, 4 miles to the south of the WSA.

The WSA is an irregularly-shaped area containing 72,690 acres of public land, including 600 acres in Nevada. Within the WSA are 3,380 acres of split-estate lands (see Map 2).

At the extremes, the area is 15 miles long and 11 miles wide. The boundary is formed by a combination of private land, BLM dirt roads, a paved county road (east side only), and legal subdivisions. Legal subdivisions form the boundary where portions of the inventory unit were excluded from further wilderness review because they lacked wilderness characteristics.

In addition, 12 low standard dead-end dirt roads (totaling 17 miles) enter the study area from various points around the perimeter and also form part of the boundary. One of the roads ends at a 320-acre parcel of private property, making the parcel a part of the boundary even though it is surrounded by the wilderness study area.

The most prominent physical feature of the study area is the Pueblo Mountains ridgeline which runs north and south along the entire length of the western half of the WSA. This is a tilted fault-block mountain range, the eastern side of which has been uplifted along a north-south trending fault. Averaging 7,300 feet in elevation along the crest, the eastern face of this ridge is steep, rugged and rocky while much of the western slope is like a table top tilted to the west at nearly a 45-degree angle.

Less than 3 miles from the western ridge lies a shorter (9-mile-long) north-south ridgeline. Along this ridgeline is Pueblo Mountain. At 8,634 feet, it is the second highest peak in southeastern Oregon and the highest point in the study area. Of the major drainages originating in the central portion of the study area, Willow and Cottonwood Creeks skirt this ridgeline to the north while both Arizona and Van Horn Creeks cut through the ridge within rugged canyons. Denio Creek also cuts through the ridge; a portion of this drainage is outside the study area to the south.

Although steep, the eastern slope of this ridgeline is much less rugged and rocky than the ridge to the west. The eastern slope gives way to foothills and lowlands along the eastern boundary as it merges with the Pueblo Valley.

It is along the eastern boundary that the study area reaches its lowest elevation (at several points) of just under 4,200 feet. A series of high valleys, basins and meadows lie between the two ridges.

Because of the elevation and exposure variations within the study area, there is a wide variety of vegetative types. Big sagebrush and low sagebrush (in the higher elevations) are the dominant vegetative species along with a variety of grasses. Mountain mahogany and aspen are found within the area at the higher elevations, while cottonwood and numerous riparian species occur along the drainages and near springs.

Interrelationships

The Pueblo Mountains WSA is adjacent to the Rincon WSA (OR-2-82) to the west. The two study areas are separated by a road, maintained primarily by BLM and serving recreationists, range users, private landowners and BLM personnel.

The Pueblo Foothills Research Natural Area (RNA) and Area of Critical Environmental Concern (ACEC) is located entirely within the northeastern portion of the study area along the lower reaches of the Cottonwood Creek drainage (see Map 2). The 2,520-acre area was designated to protect botanical values including seven plant species and a plant community unique to Oregon which includes narrowleaf cottonwood and Mormon tea. The RNA and ACEC designations protect this area for research and educational purposes.

Management of the Pueblo Foothills RNA/ACEC includes the following:

- minimizing surface disturbing activities detrimental to the plant communities and certain species;
- limiting vehicle use to the existing road;
- keeping fire out of the RNA/ACEC;
- prohibiting introduction of exotic (non-native) plants and animals; and
- authorizing research and educational use by permit only.

Management restrictions for the RNA/ACEC would continue to apply whether or not the area is designated wilderness.

The U.S. Department of Agriculture conducts a predator-control program in the Pueblo Mountains WSA along the east and west sides of the Pueblo Mountains in order to reduce predator damage to cattle by aerial shooting of coyotes.

The U.S. Soil Conservation Service has a snow survey marker located within the study area which is checked periodically by aircraft during the winter to determine snow depths. (Snow surveys provide information on snow moisture content for water supply forecasts.) Snow measurements by aircraft would be allowed to continue in wilderness as an established practice. Any other means of snow measurement or maintenance of snow survey markers would be by primitive means, such as by horseback or on foot. (Impacts on snow measurement surveys are not discussed further in this appendix.)

The WSA is located within ODFW's Beatys Butte Wildlife Management Unit which contains 2,507-square-miles of land. The WSA supports a summer population of an estimated 1,000 deer, 150 antelope and 25 California bighorn sheep and a winter population of 800 deer, 25 antelope and 25 bighorn sheep.

ODFW has not set management objectives for antelope, but has an objective of 3,000 deer for the Beatys Butte Wildlife Management Unit and 200 California bighorn sheep for the Pueblo Mountains. California bighorn sheep are a candidate species for Federal listing under the Endangered Species Act.

The ODFW goal for Whitehorse cutthroat trout is to manage for wild populations. This species is also a candidate for Federal listing under the Endangered Species Act.

The goal for nongame wildlife is to maintain populations of naturally-occurring species at self-sustaining levels.

ODFW conducts aerial census of deer, antelope and bighorn sheep three times annually. The department also monitors California bighorn sheep in the area and has proposed an additional release of sheep as part of a program to reintroduce bighorns into their former range. The Pueblo Mountains is one of the five areas identified in the Burns District as a potential California bighorns sheep transplant site.

The proposed action for this WSA does not meet with ODFW's management objectives for deer and bighorn sheep because mining would damage deer and California bighorn sheep habitat.

The Pueblo-Lone Mountain grazing allotment contains part of the Pueblo Mountains WSA, the adjacent Rincon WSA and two others, Basque Hills (OR-2-84) and Hawk Mountain (OR-1-146) WSAs. Proposals to construct range improvements in the Pueblo Mountains WSA are related to grazing management in the other three WSAs.

Winding through the central portion of the study area for 11 miles is the Pueblo Mountain segment of the Desert Trail. The trail has been marked and designated in the Pueblo Mountains through a cooperative venture between the Desert Trail Association (a private organization), the Parks and Recreation Division of the State of Oregon, and BLM. BLM and the Desert Trail Association have joined in a Cooperative Management Agreement (CMA) to share responsibilities for maintaining this portion of the trail and developing other portions. The trail is part of the Oregon State Recreational Trails System.

Harney County, Oregon, and Humboldt County, Nevada have not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory and EIS planning and scoping process. These issues concern both the effects of wilderness designation on existing and potential land uses or resources in the WSA, as well as the effects of existing and potential land uses or resources on wilderness values. Land use or resource issues raised specifically for this WSA include:

- impacts on wilderness values,
- impacts on energy and mineral development,
- impacts on livestock grazing use levels and management,
- impacts on mule deer, bighorn sheep, antelope, and Whitehorse cutthroat trout,
- impacts on recreation use levels, and
- impacts on economic value of existing and projected resource outputs and local personal income derived from them.

No other issues specific to this WSA were raised by BLM or the public.

2. Description of the Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made.

The following alternatives are analyzed:

- all wilderness
- enhanced wilderness
- partial
- proposed action
- no wilderness/no action

Although identified as a possible alternative, combining the Pueblo Mountains area with the Rincon WSA to the west by closing the road between them is not analyzed. Such a merger would not be feasible, because the road which separates the two study areas, commonly referred to as the Domingo Pass or Oregon End road, provides access for livestock operators, recreationists, BLM personnel and private landowners. Also, combining the two study areas would not enhance the manageability or wilderness qualities of either WSA.

An alternative that would add the lower portion of the Denio Creek drainage adjacent to the southeastern corner of the WSA was not analyzed because the main access roads to the mines in the upper elevations could not be closed. The WSA boundary was drawn to exclude the mines and eliminate the manageability problems associated with the impacted mining area.

All Wilderness

The all wilderness alternative would recommend all 72,690 acres of public land in the Pueblo Mountains WSA (including 600 acres in Nevada) suitable for wilderness (see Map 2). For purposes of analysis, it is assumed that private land and the mineral estate of the split-estate land in the study area would not be acquired. The 12 dead-end roads in the study area would remain open.

Energy and Mineral Development Actions

Wilderness designation would close 69,310 acres of public land within the WSA to all forms of appropriation under the mining and mineral leasing laws. The 3,380 acres of split-estate lands would remain open to mineral and energy exploration and development. These split-estate parcels are small in acreage and scattered. Without adjacent Federal lands available to expand upon, the likelihood of exploration or development occurring is significantly reduced.

The WSA includes 17,870 acres with a moderate potential for geothermal resources, based on indirect evidence. There are no geothermal leases within the WSA as of October 16, 1987, and no known developable geothermal reservoirs. Development or exploration of the geothermal resource is not projected on the split-estate under this alternative.

Based upon abundant direct evidence, a large portion of the WSA has a high potential for the occurrence of copper, gold, mercury, molybdenum and silver. A smaller area in the northeastern part of the WSA, containing rocks adjacent to the Pueblo Caldera Ring Fault, has a high potential for uranium and zinc. Known deposits of copper and mercury occur in the northeastern portion of the WSA. The WSA contains 53 mining claims as of October 16, 1987. Due to the lack of interest by industry as evidenced by the diminishing number of claims, minimal number of plans of operations previously filed and the small, scattered nature of the parcels, only casual exploration is projected on split-estate lands and on the mining claims.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Reintroduction by ODFW of bighorn sheep into the Van Horn Creek area is projected to occur in the WSA.

Livestock Management Actions

Livestock would be managed at the projected level of 3,635 AUMs in the WSA (3,430 in the Pueblo-Lone Mountain allotment and 205 AUMs in the Denio Basin allotment). The season of use and distribution of AUMs would be as shown in Table 4.

Vehicle use for livestock management and facility inspection and maintenance of 4 miles of fence on 33 miles of ways would be precluded. Fence inspection and maintenance would be done on foot or by the use of riding or pack animals. Mechanized heavy equipment would be used on the average of once every five years to maintain four ditches totaling 4 miles and 0.7 mile of pipeline, and once every 10 years to maintain six reservoirs and six springs.

Recreation Management Actions

The entire 72,690 acres, including 33 miles of ways, would be closed to recreational motorized vehicle use. There would be 17 miles of dead-end roads which would remain open under this alternative. Current recreational use is estimated to be 700 visitor days per year. Most of this use utilizes motor vehicles on existing roads and ways and can largely be attributed to big game hunting in the fall.

Enhanced Wilderness

The enhanced wilderness alternative would recommend as suitable for wilderness 68,610 acres of public land in the WSA (including 600 acres in Nevada) and 5,280 acres of public land outside the WSA boundary (see Map 3). Total public land recommended suitable would be 73,890 acres. Most of the land that would be added from outside the WSA is on the northern end of the study area, but acreage would also be added on the northeast, northwest and southwest. Some 4,080 acres of the WSA along the eastern and southern boundary would be recommended nonsuitable.

Also, an attempt would be made to acquire 3,910 acres of private land and the mineral estate of 3,875 acres of split-estate land both within and adjacent to the study area boundary. The private land and mineral estate of the split-estate acreage could be acquired through purchase or exchange with willing owners.

Assuming acquisition of private land, total area recommended suitable under this alternative would be 77,800 acres.

In addition to the 33 miles of ways closed, 13 dead-end roads and two loop roads totaling 35.5 miles would be closed.

Energy and Mineral Development Actions

Wilderness designation would close 70,015 acres within the WSA to all forms of appropriation under the mining and mineral leasing laws. If acquisition is successful, 7,785 acres of split-estate and private lands would also be closed to mineral entry for a total of 77,800 acres.

Under the enhanced alternative, 13,790 acres recommended as suitable have a moderate potential for the occurrence of geothermal resources. Lands recommended nonsuitable contain an additional 4,080 acres with moderate potential for occurrence. There is indirect evidence to support this rating.

While the nonsuitable lands would be available for leasing, no exploration or development is projected for them, since proven geothermal resources are more readily available nearby within a Known Geothermal Resource Area (KGRA).

Based upon abundant direct evidence a large portion of both suitable and nonsuitable areas have a high potential for the occurrence of cooper, gold, mercury, molybdenum and silver. Within the suitable area, a small acreage in the northeast portion, containing rocks adjacent to the Pueblo Caldera Ring Fault, also has a high potential for uranium and zinc. Deposits of copper and mercury are documented in this northeastern segment.

Due to a lack of interest by industry as evidenced by the diminishing number of claims in the WSA and a minimal number of plans of operations previously filed, no exploration or development is projected on the existing mining claims within the suitable area.

Within the nonsuitable area, an economic incentive exists for the location and development of new sources of gold, silver and mercury. Only a small portion of the area having a high potential for the occurrence of uranium and zinc occurs in the nonsuitable area. However, in the case of molybdenum, uranium, zinc and copper, other areas of the Western U.S. have known commercial deposits and exploration in the Pueblo Mountains is not expected to locate economically competitive deposits.

It is predicted that test core drilling for gold, silver and mercury would occur at 50 locations in the nonsuitable area. Drill pads would disturb a maximum of 10 acres. Ingress and egress to the drill sites would involve 2 miles of cross-country travel, disturbing two acres. Total disturbance would be 12 acres. This exploration activity is expected to be distributed throughout the nonsuitable area.

Due to the limited amount of acreage with high potential for the occurrence of gold, silver and mercury in the area recommended nonsuitable for wilderness designation, the possibility that a significant economic ore body would be discovered is considered very remote. Therefore, no mineral development is projected.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and, in the area recommended suitable, consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Reintroduction, by ODFW, of bighorn sheep into the Van Horn Creek area is projected to occur.

Livestock Management Actions

Livestock would be managed at the projected level of 3,635 AUMs in the WSA (3,430 AUMs in the Pueblo-Lone Mountain allotment and 205 AUMs in the Denio Basin allotment). The season of use and distribution of AUMs would be as shown in Table 4.

Vehicle use for livestock management and facility inspection and maintenance of 6 miles of fence on 33 miles of ways and 35.5 miles of dead-end roads would be precluded. Fence inspection and maintenance would be done on foot or by the use of riding or pack animals. Mechanized heavy equipment would be used on the average of once every 5 years to maintain 2 miles of pipeline and four ditches totaling 4 miles, and once every 10 years to maintain 10 reservoirs and six springs.

Recreation Management Actions

Assuming acquisition of private lands, the entire 77,800 acres would be closed to motorized vehicle use, including 35.5 miles of roads and 33 miles of ways.

Current recreational use is estimated to be 700 visitor days per year. Most of this use utilizes motor vehicles on existing roads and ways and can be attributed to big game hunting in the fall.

Partial

The partial alternative would recommend 41,315 acres of public land (including 600 acres in Nevada) suitable for wilderness designation (see Map 4). In addition, an attempt would be made to acquire 1,930 acres of private land within and adjacent to the WSA. An attempt would also be made to acquire the mineral estate of 2,440 acres of split-estate land within the suitable boundary. Portions of seven dead-end roads, totaling approximately 10 miles, would be closed under this alternative.

Assuming acquisitions of the private parcels, the total area recommended suitable under this alternative would be 43,245 acres. Some 31,375 acres would be recommended nonsuitable.

Major changes in the boundary would occur along the eastern and western sides of the WSA. On the west, the boundary would follow an elevation contour near the toe of the western ridge at the 5,200-foot elevation level. An area of 9,975 acres covering the lower foothills on this side of the WSA would be recommended nonsuitable for wilderness in order to eliminate conflicts with proposed range improvements.

On the northeastern side, the boundary would follow a low standard dirt road which crosses private land at the base of the east side of the western ridge. Part of the private land recommended for acquisition is along this part of the boundary. Using the road as the boundary would improve the manageability of the area by providing a more recognizable boundary than the legal subdivisions of the private land.

The remainder of the eastern boundary would follow the crest of the eastern ridgeline except for a 1.5-mile stretch along Cottonwood Creek. Placing the boundary along the summit of the ridge would avoid conflicts with projected mineral developments in an area identified as having high potential for the occurrence of metals and moderate potential for the occurrence of geothermal resources, and would screen any potential mineral development on the east side of the WSA from view in the rest of the study area.

Energy and Mineral Development Actions

Wilderness designation would close 38,875 acres within the WSA to all forms of appropriation under the mining and mineral leasing laws. If acquisition is successful, 4,370 acres of split-estate and private lands would be closed to mineral entry for a total of 43,245 acres.

The WSA includes 17,870 acres with a moderate potential for geothermal resources based on indirect evidence. There are no geothermal leases within the WSA as of October 16, 1987. Although most of the acreage (15,380 acres) rated moderate falls in the alternative's nonsuitable area and would, therefore, be open to new leasing activity, no exploration or development is projected due to the availability of proven geothermal resources in a nearby KGRA.

Based upon abundant direct evidence, a large portion of the WSA has a high potential for the occurrence of copper, gold, mercury, molybdenum and silver within the suitable area. However, there are no known developable mineral deposits within the area recommended suitable for wilderness. Due to the lack of interest by industry as evidenced by the diminishing number of claims and a minimal number of plans of operations previously filed, no exploration or development is projected on the eight existing claims in the suitable area.

Several areas with high potential for the occurrence of gold, silver, mercury, uranium, zinc, copper and molybdenum occur within the nonsuitable area. An incentive exists for the location and development of new sources of gold, silver and mercury in this area. However, in the case of uranium, zinc, molybdenum and copper, other areas of the Western U.S. have known commercial deposits and exploration in the Pueblo Mountains WSA is not expected to locate economically competitive deposits.

It is predicted that there would be test core drilling for gold, silver and mercury at 200 locations. Core drilling and associated drill pads would disturb a maximum of 30 acres. Ingress and egress would involve approximately 7 miles of cross-country travel, temporarily disturbing seven acres. Total disturbance from this activity would be approximately 37 acres and would be scattered throughout the nonsuitable area.

If exploration proves the existence of economically favorable ore deposits, there would be one open-pit gold and silver mine and one open-pit silver and mercury mine. These mines would be active at different time periods.

One 100-acre open-pit silver and mercury mine is postulated approximately 2.5 miles north of Pueblo Mountain in a hydrothermal caldera-related deposit. Two miles of improvement to an existing road, 1 mile of haul road and 3 miles of powerline will be developed disturbing 10 acres. This mining activity would disturb a total of approximately 110 acres.

One 100-acre open-pit gold and silver mine is projected in an epithermal vein deposit area approximately 2 miles southeast of Pueblo Mountain. One mile of haul road and 1 mile of powerline would be developed, disturbing three acres. This mining activity would disturb a total of approximately 100 acres.

The long-term surface disturbance from mineral development activities would be approximately 210 acres involving development of two open-pit mines, 2 miles of new road construction and 4 miles of powerlines.

Wildlife Management Actions

Habitat management would attempt to meet ODFW's population goals for deer and bighorn sheep, although projected mining conflicts may limit management options in this portion of Beatys Butte Wildlife Unit. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Reintroduction, by ODFW, of bighorn sheep into the Van Horn Creek area is projected to occur.

Livestock Management Actions

Livestock would be managed at the projected level of 4,260 AUMs in the WSA (4,055 AUMs in the Pueblo-Lone Mountain allotment and 205 AUMs in the Denio Basin allotment). The seasons of use would be as shown in Table 4.

In the Pueblo-Lone Mountain allotment, range improvements would be constructed in the area designated nonsuitable for wilderness, making 625 AUMs available to partly offset a shortage of available forage.

One spring, 5 miles of pipeline, 26 miles of fence and 3,140 acres of seeding would be developed. An 18,000-gallon water storage tank would be constructed at the beginning of the pipeline a short distance outside the boundary of the WSA.

In the suitable area, vehicle use for livestock management and facility inspection and maintenance of 4 miles of fence on 24 miles of ways and 10 miles of dead-end roads would be precluded. Fence inspection and maintenance would be done on foot or by the use of riding or pack animals. Mechanized heavy equipment would be used on the average of once every 5 years to maintain 0.25 mile of ditch and 1.75 miles of pipeline and once every 10 years to maintain eight reservoirs and five springs.

In the nonsuitable area, vehicle use would continue on 7 miles of roads and 9 miles of ways, amounting to approximately 10 trips per year.

Recreation Management Actions

Assuming acquisition of private lands, 43,245 acres would be closed to motorized vehicle use, involving 10 miles of dead-end roads and 24 miles of ways. Recreation vehicle use would continue on 31,375 acres recommended nonsuitable.

Current recreation use is estimated to be 700 visitor days per year. Most of this use utilizes motor vehicles on existing roads and ways.

Proposed Action

The proposed action would recommend 26,150 acres of public land (including 600 acres in Nevada) suitable for wilderness designation (see Map 5). In addition, an attempt would also be made to acquire the mineral estate of 1,740 acres of split-estate land within the area recommended suitable. There are no private lands within the suitable area. A portion of one dead-end road, totaling .75 mile, would be closed under this alternative. Some 46,540 acres would be recommended nonsuitable.

Major changes in the boundary would occur along the eastern and western sides of the WSA. On the west and south, the boundary would follow an elevation contour at the 6,000-foot level. An area covering all the foothills on the west side of the WSA would be recommended nonsuitable for wilderness in order to eliminate conflicts with proposed range improvements.

On the northeastern side, the boundary would follow legal subdivisions of the private land, thus eliminating all private land from the suitable area.

The remainder of the eastern boundary would follow the crest of the eastern ridgeline. Placing the boundary along the summit of the ridge would avoid conflicts with projected mineral developments in an area identified as having high favorability for metals and moderate favorability for the occurrence of geothermal resources, and screen any potential mineral development on the east side of the WSA from view in the rest of the study area.

Energy and Mineral Development Actions

Wilderness designation would withdraw 24,410 acres of public land within the WSA from all forms of appropriation under the mining and mineral leasing laws. If acquisition is successful, 1,740 acres of split-estate lands would also be closed to mineral exploration and development for a total of 26,150 acres.

The WSA includes 17,870 acres with a moderate potential for geothermal resources based on indirect evidence. There are no geothermal leases within the WSA as of October 16, 1987. Although all but 2,490 acres rated moderate fall in the alternative's non-

Assuming acquisitions of the private parcels, the total area recommended suitable under this alternative would be 43,245 acres. Some 31,375 acres would be recommended nonsuitable.

Major changes in the boundary would occur along the eastern and western sides of the WSA. On the west, the boundary would follow an elevation contour near the toe of the western ridge at the 5,200-foot elevation level. An area of 9,975 acres covering the lower foothills on this side of the WSA would be recommended nonsuitable for wilderness in order to eliminate conflicts with proposed range improvements.

On the northeastern side, the boundary would follow a low standard dirt road which crosses private land at the base of the east side of the western ridge. Part of the private land recommended for acquisition is along this part of the boundary. Using the road as the boundary would improve the manageability of the area by providing a more recognizable boundary than the legal subdivisions of the private land.

The remainder of the eastern boundary would follow the crest of the eastern ridgeline except for a 1.5-mile stretch along Cottonwood Creek. Placing the boundary along the summit of the ridge would avoid conflicts with projected mineral developments in an area identified as having high potential for the occurrence of metals and moderate potential for the occurrence of geothermal resources, and would screen any potential mineral development on the east side of the WSA from view in the rest of the study area.

Energy and Mineral Development Actions

Wilderness designation would close 38,875 acres within the WSA to all forms of appropriation under the mining and mineral leasing laws. If acquisition is successful, 4,370 acres of split-estate and private lands would be closed to mineral entry for a total of 43,245 acres.

The WSA includes 17,870 acres with a moderate potential for geothermal resources based on indirect evidence. There are no geothermal leases within the WSA as of October 16, 1987. Although most of the acreage (15,380 acres) rated moderate falls in the alternative's nonsuitable area and would, therefore, be open to new leasing activity, no exploration or development is projected due to the availability of proven geothermal resources in a nearby KGRA.

Based upon abundant direct evidence, a large portion of the WSA has a high potential for the occurrence of copper, gold, mercury, molybdenum and silver within the suitable area. However, there are no known developable mineral deposits within the area recommended suitable for wilderness. Due to the lack of interest by industry as evidenced by the diminishing number of claims and a minimal number of plans of operations previously filed, no exploration or development is projected on the eight existing claims in the suitable area.

Several areas with high potential for the occurrence of gold, silver, mercury, uranium, zinc, copper and molybdenum occur within the nonsuitable area. An incentive exists for the location and development of new sources of gold, silver and mercury in this area. However, in the case of uranium, zinc, molybdenum and copper, other areas of the Western U.S. have known commercial deposits and exploration in the Pueblo Mountains WSA is not expected to locate economically competitive deposits.

It is predicted that there would be test core drilling for gold, silver and mercury at 200 locations. Core drilling and associated drill pads would disturb a maximum of 30 acres. Ingress and egress would involve approximately 7 miles of cross-country travel, temporarily disturbing seven acres. Total disturbance from this activity would be approximately 37 acres and would be scattered throughout the nonsuitable area.

If exploration proves the existence of economically favorable ore deposits, there would be one open-pit gold and silver mine and one open-pit silver and mercury mine. These mines would be active at different time periods.

One 100-acre open-pit silver and mercury mine is postulated approximately 2.5 miles north of Pueblo Mountain in a hydrothermal caldera-related deposit. Two miles of improvement to an existing road, 1 mile of haul road and 3 miles of powerline will be developed disturbing 10 acres. This mining activity would disturb a total of approximately 110 acres.

One 100-acre open-pit gold and silver mine is projected in an epithermal vein deposit area approximately 2 miles southeast of Pueblo Mountain. One mile of haul road and 1 mile of powerline would be developed, disturbing three acres. This mining activity would disturb a total of approximately 100 acres.

The long-term surface disturbance from mineral development activities would be approximately 210 acres involving development of two open-pit mines, 2 miles of new road construction and 4 miles of powerlines.

Wildlife Management Actions

Habitat management would attempt to meet ODFW's population goals for deer and bighorn sheep, although projected mining conflicts may limit management options in this portion of Beatys Butte Wildlife Unit. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Reintroduction, by ODFW, of bighorn sheep into the Van Horn Creek area is projected to occur.

Livestock Management Actions

Livestock would be managed at the projected level of 4,260 AUMs in the WSA (4,055 AUMs in the Pueblo-Lone Mountain allotment and 205 AUMs in the Denio Basin allotment). The seasons of use would be as shown in Table 4.

In the Pueblo-Lone Mountain allotment, range improvements would be constructed in the area designated nonsuitable for wilderness, making 625 AUMs available to partly offset a shortage of available forage.

One spring, 5 miles of pipeline, 26 miles of fence and 3,140 acres of seeding would be developed. An 18,000-gallon water storage tank would be constructed at the beginning of the pipeline a short distance outside the boundary of the WSA.

In the suitable area, vehicle use for livestock management and facility inspection and maintenance of 4 miles of fence on 24 miles of ways and 10 miles of dead-end roads would be precluded. Fence inspection and maintenance would be done on foot or by the use of riding or pack animals. Mechanized heavy equipment would be used on the average of once every 5 years to maintain 0.25 mile of ditch and 1.75 miles of pipeline and once every 10 years to maintain eight reservoirs and five springs.

In the nonsuitable area, vehicle use would continue on 7 miles of roads and 9 miles of ways, amounting to approximately 10 trips per year.

Recreation Management Actions

Assuming acquisition of private lands, 43,245 acres would be closed to motorized vehicle use, involving 10 miles of dead-end roads and 24 miles of ways. Recreation vehicle use would continue on 31,375 acres recommended nonsuitable.

Current recreation use is estimated to be 700 visitor days per year. Most of this use utilizes motor vehicles on existing roads and ways.

Proposed Action

The proposed action would recommend 26,150 acres of public land (including 600 acres in Nevada) suitable for wilderness designation (see Map 5). In addition, an attempt would also be made to acquire the mineral estate of 1,740 acres of split-estate land within the area recommended suitable. There are no private lands within the suitable area. A portion of one dead-end road, totaling .75 mile, would be closed under this alternative. Some 46,540 acres would be recommended nonsuitable.

Major changes in the boundary would occur along the eastern and western sides of the WSA. On the west and south, the boundary would follow an elevation contour at the 6,000-foot level. An area covering all the foothills on the west side of the WSA would be recommended nonsuitable for wilderness in order to eliminate conflicts with proposed range improvements.

On the northeastern side, the boundary would follow legal subdivisions of the private land, thus eliminating all private land from the suitable area.

The remainder of the eastern boundary would follow the crest of the eastern ridgeline. Placing the boundary along the summit of the ridge would avoid conflicts with projected mineral developments in an area identified as having high favorability for metals and moderate favorability for the occurrence of geothermal resources, and screen any potential mineral development on the east side of the WSA from view in the rest of the study area.

Energy and Mineral Development Actions

Wilderness designation would withdraw 24,410 acres of public land within the WSA from all forms of appropriation under the mining and mineral leasing laws. If acquisition is successful, 1,740 acres of split-estate lands would also be closed to mineral exploration and development for a total of 26,150 acres.

The WSA includes 17,870 acres with a moderate potential for geothermal resources based on indirect evidence. There are no geothermal leases within the WSA as of October 16, 1987. Although all but 2,490 acres rated moderate fall in the alternative's nonsuitable area and would, therefore, be open to new leasing activity, no exploration or development is projected due to the availability of proven geothermal resources in a nearby KGRA.

Based upon abundant direct evidence, a large portion of the WSA has a high potential for the occurrence of copper, gold, mercury, molybdenum and silver within the suitable area. However, there are no known developable mineral deposits in the suitable area. Due to the lack of interest by industry as evidenced by the diminishing number of claims and a minimal number of plans of operations previously filed, no exploration or development is projected on the eight existing claims in the suitable area.

Several areas with high potential for the occurrence of gold, silver, mercury, uranium, zinc, copper and molybdenum occur within the nonsuitable area. An economic incentive exists for the location and development of new sources of gold, silver and mercury in this area. However, in the case of uranium, zinc, molybdenum and copper, other areas of the Western U.S. have known commercial deposits and exploration in the Pueblo Mountains WSA is not expected to locate economically competitive deposits.

It is predicted there would be test core drilling for gold, silver and mercury at 200 locations. Core drilling and associated drill pads would disturb a maximum of 30 acres. Ingress and egress would involve 7 miles of cross-country travel, temporarily disturbing seven acres. Total disturbance from this activity would be approximately 37 acres and would be scattered throughout the nonsuitable area.

If exploration proves the existence of economically favorable ore deposits, there would be one open-pit gold and silver mine and one open-pit silver and mercury mine.

One 100-acre open-pit silver and mercury mine is postulated approximately 2.5 miles north of Pueblo Mountain in a hydrothermal caldera-related deposit. Two miles of improvement to an existing road, 1 mile of haul road and 3 miles of powerline would be developed disturbing 10 acres. This mining activity would disturb approximately 110 acres.

One 100-acre open-pit gold and silver mine is predicted in an epithermal vein deposit area approximately 2 miles southeast of Pueblo Mountain. One mile of haul road and 1 mile of powerline would be developed disturbing three acres. This mining activity would disturb a total of approximately 100 acres.

The long-term surface disturbance from mineral development activities would be approximately 210 acres, involving development of two open-pit mines, 2 miles of new road construction and 4 miles of powerlines.

Wildlife Habitat Management Actions

Habitat management would attempt to meet ODFW's population goals for deer and bighorn sheep. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

A stream project along 1 mile of Denio Creek is proposed in the area recommended as nonsuitable. Ten instream structures would be constructed to create pools for Whitehorse cutthroat trout and to help stabilize eroding streambanks.

Reintroduction, by ODFW, of Whitehorse cutthroat trout into upper Denio Creek and bighorn sheep into the Van Horn Creek area is projected to occur.

Livestock Management Actions

Livestock would be managed at the projected level of 4,430 AUMs in the WSA (4,225 AUMs in the Pueblo-Lone Mountain allotment and 205 AUMs in the Denio Basin allotment). The season of use would be as shown in Table 4.

In the Pueblo-Lone Mountain allotment, range improvements would be constructed in the area designated nonsuitable for wilderness, making 795 AUMs available to partly offset a shortage of available forage.

One spring, 3 reservoirs, 5 miles of pipeline, 26 miles of fence and 3,140 acres of seeding would be developed. An 18,000-gallon water storage tank would be constructed at the beginning of the pipeline a short distance outside the WSA boundary.

In the suitable area, vehicle use for livestock management and facility inspection and maintenance of 1 mile of fence on 10.75 miles of ways and 0.75 mile of dead-end road would be precluded. Fence inspection and maintenance would be done on foot or by the use of riding or pack animals. Mechanized heavy equipment would be used on the average of once every 10 years to maintain one reservoir and four springs.

In the nonsuitable portion, vehicle use for livestock management would continue on 22.75 miles of ways and 16.25 miles of roads, amounting to approximately 10 trips per year.

Recreation Management Actions

The 26,150-acre suitable area, including 0.75 mile of dead-end road and 10.75 miles of ways, would be closed to motorized vehicle use. Recreation vehicle use in the 46,540-acre nonsuitable area would continue. Current recreational use is estimated to be 700 visitor days per year. Most of this activity involves use of motor vehicles on existing roads and ways.

No Wilderness/No Action

The no wilderness/no action alternative would recommend the entire WSA nonsuitable as wilderness. It represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

The entire 72,690-acre WSA would be open to mineral entry.

This alternative includes 17,870 acres with a moderate potential for geothermal resources, based on indirect evidence. The area has no current geothermal leases. Although these lands would be open to the issuance of new geothermal leases under this alternative, no development is predicted. A nearby KGRA would attract geothermal-related activity because it contains proven geothermal resources of a high quality. Development or exploration of the geothermal resource is, therefore, not postulated under this alternative.

A large portion of the WSA has a high potential along with abundant direct evidence for the occurrence of copper, gold, mercury, molybdenum and silver. A smaller area in the northeastern area of the WSA containing rocks adjacent to the Pueblo Caldera Ring Fault also has a high potential for uranium and zinc.

Other areas of the western U.S. have known economic deposits of copper, zinc, uranium and molybdenum, but the incentive to locate new sources of these minerals is lacking and is not expected to increase substantially in the foreseeable future. Only casual exploration is expected for these minerals and it is predicted that no deposits will be found that would be economically competitive and subject to development.

An economic incentive exists for the location and development of new sources of gold, silver and mercury in this area.

It is predicted there would be test core drilling at 350 locations. Core drilling activity would disturb a maximum of 48 acres. Ingress and egress to drill sites would involve 8 miles of cross-country travel disturbing an additional 11 acres, for a total of 59 acres. This exploration is expected to be distributed throughout the eastern half of the WSA.

It is projected that exploration would prove the existence of economically favorable ore deposits and result in two open-pit gold and silver mines and one open-pit silver and mercury mine. These mines would be active at different time periods depending upon the demand for the mineral being produced.

A 100-acre open-pit silver and mercury mine is projected approximately 2.5 miles directly north of Pueblo Mountain. Two miles of improvement to an existing road, 1 mile of new haul road and 3 miles of powerline would be developed disturbing 10 acres. This mining activity would disturb a total of approximately 110 acres.

One 100-acre open-pit gold and silver mine is predicted in an epithermal vein deposit area approximately 2 miles southeast of Pueblo Mountain. One mile of haul road and 1 mile of powerline would be developed disturbing three acres. This mining activity would disturb a total of approximately 100 acres.

A gold and silver mine is predicted to occur in the south-central portion of the WSA. It is postulated that more extensive geological investigation and exploration would locate an economically potential ore body. The resulting open-pit mine would disturb 75 acres while associated maintenance facilities would disturb 11 acres. Haul roads involving 2 miles of new construction would disturb two acres. Associated powerlines (2 miles) would disturb four acres. Total acreage disturbed would be approximately 100 acres.

Total surface disturbance from all projected mineral development would be approximately 310 acres, including three mine sites, 4 miles of new road construction and 6 miles of powerlines.

Wildlife Habitat Management Actions

Habitat management would attempt to meet ODFW's population goals for deer and bighorn sheep, although projected mining conflicts may limit management options in this portion of Beatys Butte Wildlife Unit. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

Two wildlife projects are proposed for the study area. The projects involve stream habitat improvements in Van Horn Creek and Denio Creek to improve and expand habitat for the Whitehorse cutthroat trout. The proposal includes the development of 10 instream structures in each drainage within the WSA which would create pools and to help stabilize streambanks. The structures would be implemented along a 1-mile section of each stream. Also projected is the reintroduction of Whitehorse cutthroat trout in the upper reaches of Denio Creek and Van Horn Creek and bighorn sheep in the Van Horn Creek area.

Livestock Management Actions

Livestock would be managed at the projected level of 4,430 AUMs in the WSA (4,225 AUMs in the Pueblo-Lone Mountain allotment and 205 AUMs in the Denio Basin allotment). The season of use and distribution of AUMS are shown in Table 4.

One spring, three reservoirs, 5 miles of pipeline, 34 miles of fence and 3,140 acres of seeding would be constructed. An 18,000-gallon water storage tank would be constructed at the beginning of the pipeline a short distance outside the WSA boundary.

Vehicle use for livestock management and facility inspection and maintenance of pipelines, ditches, springs, reservoirs and fences would continue on 33 miles of ways and 17 miles of dead-end roads amounting to approximately 10 trips per year.

Recreation Management Actions

Vehicle-oriented recreation would continue on roads and ways. Most use would be naturally restricted because the terrain prohibits intensive cross-country vehicle use. Most of the motorized recreation use takes place in the fall during the mule deer, antelope and bighorn sheep hunting seasons when hunters drive into the area to set up camps and scout for animals. The level of use is approximately 700 annual visitor days.

Summary

Table 1 summarizes the projected management actions under each alternative. Table 2 summarizes the environmental consequences of each alternative.

3. Affected Environment

This section discusses only those activities or resources which influence the character of the study area, or may be affected by the alternatives.

Wilderness Values

Naturalness

The Pueblo Mountains WSA is in a natural condition. The unnatural developments of the WSA are not substantially noticeable within the study area as a whole. Because the steep topography of much of the WSA precludes development in many locations and because the diversity of the landscape screens many of the developments, the unnatural influences on the natural quality of the study area are slight.

Unnatural developments within the study area include six reservoirs, six developed springs, three fences totaling 4 miles, 33 miles of vehicle ways, 18 areas of past mining activity, one powerline totaling 4 miles, four ditches totaling 4 miles, one cemetery and two dumps. Generally, the developments are scattered, screened by the topography, and can be seen from only small, localized areas. Approximately four percent of the study area is influenced by these features.

The reservoirs, developed springs and ditches are each visible only from small areas. The ditches, when maintained in the future, would be slightly more noticeable. The water tank is silver colored and quite visible but could be painted a darker color. The mining scars are localized and often screened by topography, so they are visible only from the immediate vicinity.

The powerline runs adjacent to the paved county road (the eastern boundary road) in the lowlands and is only visible along the road. The cemetery lies close to the county road and is not a substantial visual disturbance. The vehicle ways are generally located in drainages where they are seen only from small areas. In addition, many of the ways are overgrown and barely visible.

Developments outside the study area do little to detract from the natural character of the WSA. Outside developments which influence the study area are boundary roads (including the 12 roads which penetrate the WSA), fences, powerlines and ranches. Most of these features are visible only from points around the perimeter of the area and are not an overwhelming influence on the landscape. Those developments which are occasionally visible from the higher elevations are distant and unobtrusive.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

Pueblo Mountains WSA has outstanding opportunities for solitude due to the large size, configuration and topography of the area. The Pueblo Mountains' diverse landscape includes rugged ridges with steep escarpments, high-elevation basins and meadows, and deeply-cut drainages. All of these physical features enhance the opportunities for solitude within the area and provide numerous settings for a visitor to find seclusion.

Vegetative screening, sufficient to enhance solitude, is limited to portions of the drainages, meadows and spring areas. Vegetation such as aspen, cottonwood, alder, willow and chokecherry provide some screening in the wetter locations, while mountain mahogany occurring in the higher meadows and east-facing slopes in the central part of the WSA also provides some screening.

Outstanding opportunities for primitive and unconfined types of recreation in the Pueblo Mountains WSA include day hiking, backpacking, hunting, horseback riding, sightseeing, wildlife viewing and photography. The high quality of these activities is largely due to the abundance and attractiveness of the area's physical features.

The drainages and steep slopes around the perimeter of the WSA provide the best opportunities for day hikes. The drainages (primarily those on the eastern side) also provide access to the interior of the study area for longer backpacking and horseback riding trips. Opportunities for sightseeing and photography can be found throughout the WSA and range from vast distant views from the summit of Pueblo Peak and the western ridge to more localized viewing of waterfalls in the upper reaches of Cottonwood Creek and the numerous wild flowers.

Opportunities for hunting and viewing wildlife are also available within the study area. Mule deer and upland game birds (chukar, quail and dove) are the most commonly hunted species, while numerous nongame types of wildlife are frequently visible throughout the area.

Special Features

The Pueblo Mountains WSA contains several special features which contribute to the value of the area as wilderness (see Map 7). These include distinctive geological, botanical, wildlife and scenic qualities.

Geological features include the enormous westward-tilted fault block, of which the Pueblo Mountains form the southern part. This is an impressive example of the Basin and Range type of structure which covers much of Nevada. It is characterized by a series of parallel fault blocks forming elongated mountain ranges and broad, intervening valleys. The Steens-Pueblo fault block represents the northernmost extension of this type of structure.

Another interesting geological feature is the pre-Tertiary rocks in the southern part of the WSA which are exposed along the eastern front of the block. Except for a small outcrop in the Trout Creek Mountains, these are the only rocks of their kind in southeastern Oregon and are the oldest as well. They outcrop from the east slopes near Arizona Creek to Denio, Nevada. Also present are pre-Tertiary granitic rocks which are exposed in the southernmost part of the WSA, about 1.5 miles northeast of Denio. They represent an intrusive igneous body which is somewhat younger than the nearby metamorphic rocks.

On the eastern side of the WSA, extending from the fault block, another type of geologic formation can be seen. This is a metamorphosed conglomerate, consisting of large gravels and cobbles which have been compressed and compacted to form resistant outcrops. The metamorphosed conglomerate is younger than the Tertiary lavas but older than gravel deposits on the valley floor. It has been uplifted and deformed as part of the Pueblo-Steens fault block.

Vegetation occurring in the WSA is a special feature because of the presence of six plant species of special interest and because of the RNA portion of the study area which contains uncommon plants and a narrowleaf cottonwood/Mormon tea community. (The Vegetation section further discusses the six plant species of special interest.)

The presence of bighorn sheep and sage grouse (both candidates for Federal listing under the Endangered Species Act) and crucial deer and antelope winter range makes wildlife values a special feature of the WSA. The study area also provides habitat for a native species of trout. The Whitehorse cutthroat trout, another candidate for Federal listing under the Endangered Species Act, has been restocked into its assumed native habitat in Van Horn Creek. This species is found only in a few streams other than Van Horn Creek and Denio Creek in the Pueblo Mountains, including the larger streams which drain the eastern side of Steens Mountain and two drainages in the Trout Creek Mountains.

The Alvord chub, a candidate for Federal listing under the Endangered Species Act, is found in a number of springs and desert streams in Pueblo Valley. The streams in the Pueblo Mountain WSA which drain the eastern side of the Pueblo Mountain range and provide habitat for this small fish are the lower reaches of Willow Creek, Cottonwood Creek, Arizona Creek, Colony Creek, Van Horn Creek and Denio Creek.

The outstanding scenery of the study area is another special wilderness feature. The high quality scenic area includes most of the central portion of the WSA and consists of the western slope of the eastern ridge, the western ridge, and the high basins and meadows in the interior.

Diversity in the National Wilderness Preservation System (NWPS)

According to the Bailey-Kuchler system of classifying ecosystems, the WSA is located in the Intermountain Sagebrush Province. Some lower elevation areas have a potential community of saltbush-greasewood and the rest of the WSA has a potential natural vegetation of sagebrush steppe.

The WSA contains seven ecosystems listed in the Basin and Range section of the Oregon Natural Heritage Plan. These include big sagebrush/bluebunch wheatgrass, big sagebrush/Idaho fescue, low sagebrush/bluebunch wheatgrass, low sagebrush/Idaho fescue, mountain mahogany community in the southern Basin and Range, narrowleaf cottonwood and Mormon tea community complex and a shadscale-spiny hopsage-budsage community. One ecosystem which occurs in this WSA but is not listed in the Oregon Natural Heritage Plan is three-tip sagebrush/Idaho fescue.

The study area is within five hours' driving time of two standard metropolitan statistical areas with populations over 100,000: Boise, Idaho and Reno, Nevada.

Energy and Mineral Development

The geology, energy and mineral resources of the Pueblo Mountains were evaluated by interpretation of existing literature and review of past and present mining claims or leases and mineral occurrences. Information was supplied by the U.S. Bureau of Mines in a report entitled, "Mineral Resources of the Pueblo Mountains Study Area, Harney County, Oregon and Humboldt County, Nevada, Open-File Report MLA 8-87." Information was also supplied by the U.S. Geological Survey in a report entitled "U.S. Geological Survey Bulletin 1740-B." Additional information was obtained by BLM through a geochemical survey under contract with the Oregon Department of Geology and Mineral Industries (DOGAMI). Technical details of the evaluation are included in a BLM report titled, "Assessment of Geology, Energy, Mineral Resources, Pueblo Mountains Geologic Resource Area, Harney County, Oregon."

The WSA is within the Pueblo Mountains geologic resource area which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the classification is based (confidence level). A description of the rating system is provided in the Statewide EIS volume.

Table 3 shows the energy and mineral classifications in the study area. Map 6 shows where energy and mineral resources have moderate or high potential for occurrence in the WSA.

The northern part of the WSA is within an area that has been nominated as an Area of Critical Mineral Potential (ACMP) and is considered to have potential for the occurrence of gold and mercury. ACMPs are areas within existing or "de facto" withdrawals (from mineral development) which are identified by the public as having mineral potential that is important to the local, regional or national economy or which could become economically important in the future. ACMPs are used by BLM to reevaluate the withdrawals.

The exposed rocks within the WSA consist of Permian-Triassic metamorphic, Cretaceous intrusive, Tertiary volcanics and Quaternary alluvial deposits. A north-south belt of mineralization in the eastern half of the study area is associated with the metamorphic rocks and geological contacts and fractures in the volcanics.

Energy Resources

The eastern and southeastern portions of the study area have moderate potential for the occurrence of geothermal resources. Oil and gas resources have low potential for occurrence. As of October 16, 1987, there were no geothermal or oil and gas leases in the Pueblo Mountains WSA.

Mineral Resources

Based on abundant direct evidence, a large portion of the WSA has a high potential for occurrence of copper, gold, mercury, molybdenum and silver. A smaller area in the northeastern area of the WSA containing rocks adjacent to the Pueblo Caldera Ring Fault also has a high potential for occurrence of uranium and zinc. The area had 53 mining claims as of October 16, 1987.

Vegetation

Pueblo Mountains WSA contains a variety of plant communities. The most extensive communities are big sagebrush/bluebunch wheatgrass and big sagebrush/Idaho fescue. Communities which are more local in occurrence are mountain mahogany and three-tip sagebrush.

The vegetative composition and ecological status in the WSA is currently mid-seral stage overall and the trend is downward, particularly in areas subject to heavy or severe livestock use.

The ecological status of the lower elevation areas is estimated to be early or mid-seral with the steeper slopes being mid- to late seral. The potential natural community on these sites is bluebunch wheatgrass and big sagebrush.

The community on the steep, north- and east-facing slopes and in the higher elevation basins is big sagebrush/Idaho fescue. The estimated ecological status is mid-seral in the basins and mid- to late seral on the steeper sites. The major potential natural community species are big sagebrush and Idaho fescue.

Low sagebrush communities also occur on some steep north- and east-facing slopes and in the higher elevation basins. Most areas are estimated to be mid- to late seral, and the probable potential natural community is Idaho fescue and low sagebrush.

The mountain mahogany community grows on rocky terraces and slopes at higher elevations. The ecological status is estimated to be mid- to late seral and the major potential natural community is mountain mahogany, fescue and bluegrass.

Small three-tip sagebrush communities occur on north- and west-facing slopes in the southern end of the Pueblo Mountains. The ecological status of these communities is estimated to be mid- to late seral. The probable potential natural community is three-tip sagebrush and Idaho fescue.

The community of the steep exposed south slopes at the lower elevations on the east side of the WSA includes spiny hopsage, Mormon tea and purple sage. These slopes are the only place Mormon tea grows in Burns District. The ecological status is estimated to be mid-seral and the major potential natural community species are desert needlegrass, Indian ricegrass, spiny hopsage and Mormon tea.

Other important communities scattered throughout the WSA include riparian, meadow and aspen communities. Riparian vegetation grows along the many perennial streams on both the east and west slopes of the mountains. The major riparian species include willow, alder, aspen, rose and, on certain drainages, narrowleaf cottonwood. Riparian areas are found along most of the streams flowing out of the area. There are 57 miles of stream riparian habitat on public land in the WSA. The status of riparian vegetation is 30 percent early seral, 42 percent mid-seral, 26 percent late seral and 2 percent potential natural community.

The Pueblo Foothills RNA/ACEC is managed to protect narrowleaf cottonwood and the associated species on the exposed slopes, including Mormon tea.

Meadows are often associated with riparian areas and often occur at elevations above 5,000 feet. The vegetation on the meadows includes several species of bluegrasses and sedges and a variety of forbs. The ecological status is early to mid-seral.

Aspen groves generally occur along streams and sometimes they expand to include many acres, especially in the headwaters of Willow, Cottonwood and Van Horn Creeks. Aspen groves are estimated to be mid-seral and the potential natural community is primarily aspen.

Six plant species of special interest are known to exist within the WSA. One species, *Astragalus solitarius* (weak milk vetch) is a candidate for Federal listing as threatened or endangered. The other five species, *Chaenactis macrantha* (large-flowered chaenactis), *Chaenactis stevioides* (broad-flowered chaenactis), *Eriogonum ochrocephalum ssp. calcareum* (ochre flowered buckwheat), *Melica stricta* (nodding melic) and *Phacelia gymnoclada* (naked-stemmed phacelia), are on List 2 in the Oregon Natural Heritage Plan's "Rare, Threatened, and Endangered Plants and Animals of Oregon" (1987).

Wildlife

Wildlife habitat types in the Pueblo Mountains range from big sagebrush found at low elevations to aspens and mountain mahogany found at higher elevations. Meadows, cliffs, talus and riparian habitats are abundant throughout much of the WSA. Water is well distributed.

The WSA has habitat to support a large population of bighorn sheep. California bighorn sheep were released in the Pueblo Mountains in 1976, 1980 and 1983 by ODFW. Bighorns summer in the mountainous parts of the WSA near Cottonwood Creek, Willow Creek and Denio Basin. They have wintered near the upper reaches of Stonehouse Creek and out of the WSA. California bighorns are a candidate for Federal listing as threatened or endangered.

Antelope winter at low elevations along the north edge of the WSA. The northeastern part of the study area is crucial winter range for antelope. Antelope summer in some of the basins having low sagebrush cover. The 10 Cent Meadow and Reaux Creek areas in the central and northern portions of the WSA are antelope summer range.

The good interspersion of water, forage and thermal cover provides good summer range for mule deer. Mule deer winter along the eastern and western foothills of the WSA and near Denio Basin. The eastern and western slopes of the WSA are crucial deer winter range.

Some of the other mammals in the WSA include mountain cottontail rabbit, black-tailed jackrabbit, bushy-tailed woodrat, canyon mouse, deer mouse, long-eared myotis (bat), coyote and bobcat.

Songbirds in the area include black-throated sparrows in the canyons along the edge of the Pueblo Valley, and Brewer's sparrow, western meadowlark, and sage sparrow in upland big sagebrush habitat. Common raptors are golden eagle, American kestrel and prairie falcon. Ravens also inhabit the area.

The Riding's satyr butterfly *(Neominois ridingsii)* was recently reported on the Pueblo Mountains.

Chukars are abundant in the rocky canyons and rimrock found over much of the area. Sage grouse, found near some of the meadows and low sagebrush flats such as 10 Cent Meadow, are a candidate for Federal listing as threatened or endangered. Valley quail are found near brushy drainages.

Sagebrush lizards, side-blotched lizards, western rattlesnakes and bullsnakes are found throughout the area.

Although occupying only a small part of the WSA, riparian habitat contains a rich diversity of the wildlife species. Common bushtit, ruby-crowned kinglet, dipper, yellow warbler, yellow-rumped warbler and robin are some of the songbirds using riparian habitat. Riparian habitat is found along most of the streams in the area. Fifty-seven miles of riparian habitat are found along streams flowing through public land.

Whitehorse cutthroat trout, a candidate for Federal listing as threatened or endangered, were released in Van Horn Creek and Denio Creek in 1976 and 1980. They have become established in 2.5 miles of Van Horn Creek and 0.2 mile of Denio Creek in the WSA and another mile of Denio Creek outside the WSA.

The Alvord chub, a candidate for Federal listing under the Endangered Species Act, is found in 2.5 miles of Willow Creek, 1 mile of Arizona Creek, 0.2 mile of Denio Creek, 2 miles of Cottonwood Creek, 0.5 mile of Colony Creek and 2.5 miles of Van Horn Creek inside the WSA.

Watershed

The WSA contains approximately 57 miles of perennial streams, including four major watersheds on the south and east sides of the Pueblo Mountains, and 10 smaller, perennial drainages. The major watersheds are comprised of Denio, Van Horn, Willow and Cottonwood Creeks. Many acres of meadow are present in the major watersheds and along some of the smaller drainages. Some of the meadows are drying up and are being invaded by big sagebrush because large headcuts have developed and the water is being channeled away. Headcuts are also evident along most of the perennial streams. The headcuts on Denio Creek are presently stabilizing due to improved livestock management while the headcuts on the other drainages are either staying the same or expanding, depending on the intensity of livestock use. The fecal coliform count is high in all of the streams, but the sediment load is generally low.

Livestock Grazing

Portions of two grazing allotments (Pueblo-Lone Mountain and Denio Basin) are within the WSA. Currently all public lands in the WSA are permitted for livestock grazing. Projected baseline livestock use and the season of use for each allotment are shown in Table 4. Based on preliminary studies, there is a current shortage of available forage in the Pueblo-Lone Mountain allotment portion of the WSA. The present level of livestock use is causing a downward trend in ecological status in areas of intensive livestock use. A reduction of 1,055 AUMs from current estimated use in the WSA is projected to be the baseline use at the time of Congressional action on this WSA. The actual level of reduction will depend on the results of monitoring.

Existing livestock improvements within the WSA are 6 springs, 6 reservoirs, 0.7 mile of pipeline, 4 miles of fence and 4 miles of irrigation ditches.

Livestock operators use motorized vehicles on 33 miles of ways and 17 miles of dead-end roads approximately 10 times per year for fence, spring, reservoir and pipeline inspection and maintenance, to check on livestock and to spread salt.

Recreation Use

Recreation is one of the major land uses of the Pueblo Mountains WSA. Estimated use is 700 visitor days per year, of which 300 visitor days is attributed to primitive recreation.

The use of vehicles for recreation is associated with hunting for deer, antelope and upland game. Deer hunting is above average and is estimated to provide high visitor use. Antelope hunting is low. Hunting for chukar, quail and dove accounts for moderate visitor use. The majority of hunters, for nearly all game species, use vehicles for access into the study area.

Fishing in Van Horn Creek accounts for a low amount of visitor use.

The Pueblo Mountain segment of the Desert Trail runs along the Pueblo Mountain ridge for about 11 miles within the WSA. The trail receives high use because of the outstanding scenic and wilderness values and other special geologic, plant and animal attractions.

Local Personal Income

Livestock use at the current level of 4,430 AUMs and recreation use totaling 700 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $53,160 for livestock grazing and $8,400 related to recreation use of the WSA, for an overall total of $61,560. The Statewide EIS volume discusses the term local personal income and how income figures have been derived.

4. Environmental Consequences

Introduction

This section discusses the environmental consequences of implementing each of the alternatives in this WSA. Resources and activities not significantly affected by any of the alternatives are not discussed. That volume discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness: 72,690 acres
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

All of the WSA would be designated wilderness and wilderness values within the entire 72,690 acres of public land would be protected by legislative mandate. Wilderness values of naturalness, solitude, primitive and unconfined recreation, as well as special features, would be retained in the area which includes an impressive tilted fault-block mountain range and the second highest mountain in southeastern Oregon. This area also includes a series of high-elevation drainage basins and meadows which contain the headwaters for several perennial streams.

Naturalness

The area's topographic features, the north-south ridges, Pueblo Mountains, drainages and canyons and high basins and meadows would be enhanced by prohibiting motorized vehicle use. Closure of 33 miles of ways, which influence approximately 4,700 acres (6.5 percent of the WSA), would allow the ways to revegetate within two to three growing seasons, making them substantially unnoticeable. Restrictions on vehicle use would also prevent new ways from being established as a result of cross-country travel.

Although 17 miles of dead-end roads would remain open, the closure of 33 miles of ways would greatly improve the overall naturalness of the area, particularly in the central portion of the WSA in the vicinity of 10 Cent Meadows and in the southern portion near Propeller Meadows.

Maintenance of three fences totaling 4 miles in length would be completed using horses and pack animals; therefore, impacts would be minimal. Maintenance of four ditches totaling 4 miles and 0.7 mile of pipeline would require use of heavy mechanized equipment approximately once every five years and maintenance of six reservoirs and six springs would require use of heavy mechanized equipment once every 10 years. This infrequent use would not prevent the ways from revegetating.

Solitude

Opportunities for solitude would be improved by the elimination of motorized vehicles on 33 miles of ways, especially in the central and southern portions of the WSA. Closure of the ways to motorized vehicle use would reduce visitor use to less than 500 visitor days per year.

Maintenance of four irrigation ditches (totaling 4 miles) and 0.7 mile of pipeline with heavy mechanized equipment once every 5 years and maintenance of six reservoirs and six springs once every 10 years would cause short-term localized disturbance of solitude.

Primitive and Unconfined Recreation

Closure of 33 miles of ways to motorized vehicle use would greatly increase the opportunities for primitive and unconfined recreation opportunities such as hiking, backpacking, hunting, horseback riding, sightseeing, wildlife viewing and photography. Some of the reduction in vehicle-oriented hunting would be offset by increased use from hunters who prefer nonmotorized access to their hunting area.

Special Features

The all wilderness alternative would protect the outstanding special features in their present condition. This would include geologic values such as the north-south ridges, Pueblo Mountain, exposed pre-Tertiary rocks, metamorphosed conglomerate, five plant species of special interest, wildlife and botanical values, including those associated with the RNA, and outstanding scenic quality, particularly in the central portion of the WSA.

The botanical, wildlife and scenic values would be maintained. This includes plant species of special interest as well as the vegetative communities found in the RNA. A wide variety of wildlife associated with the northern Great Basin such as California bighorn sheep, sage grouse, Whitehorse cutthroat trout and Alvord chub would be protected. California bighorn sheep, sage grouse and Whitehorse cutthroat trout are all candidates for Federal listing under the Endangered Species Act.

The potential for impacts by incidental ORV use to plant and animal communities, and species of special interest, would be reduced by closing 33 miles of ways. These impacts include soil movement and compaction, impairment of scenic values and minor seasonal disturbance to wildlife inhabiting the study area. The special features would be protected from mineral development because wilderness designation would close 69,310 acres of public land to mineral exploration and development. The 3,820 acres of private and split-estate land (representing 5.3 percent of the study area) would remain open to development. However, such development is not projected to occur under this alternative.

Conclusion: Wilderness designation of the entire 72,690 acres within the Pueblo Mountains WSA would result in the protection of existing wilderness values and probable enhancement of those values.

Impacts on Energy and Mineral Development

Wilderness designation would close 69,310 acres within the WSA to mineral and energy exploration and development. The 3,380 acres of split-estate land would remain open to mineral and energy exploration and development.

Energy Development

The Pueblo Mountains WSA contains 17,870 acres of land with a moderate potential for the occurrence of geothermal resources. Due to more favorable geothermal resources located in a nearby KGRA, no development is predicted on the split-estate lands or for the public lands involved in this WSA, if the area were to be opened to energy development.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for zinc, uranium, copper, mercury, molybdenum, silver and gold would be precluded on 69,310 acres. It is predicted that exploration, if the area were to remain open to mineral entry, would prove the existence of an economical ore body for the production of gold, silver and mercury. Development of the three projected mines, two producing gold and silver and one silver and mercury, would be precluded under wilderness designation.

Exploration and development could occur on the split-estate lands. However, no such exploration or development is postulated due to the small and isolated size of the parcels and the lack of Federal lands to expand on.

Conclusion: Production of mercury, gold and silver from three projected mines would be foregone.

Impacts on Vegetation

Wilderness designation would not introduce any significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the vegetative section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid-seral to late seral stages overall. Utilization of key forage species would remain at approximately 60 to 70 percent on gentle slopes to flat areas and at 50 percent or less on the steeper sites.

The 33 miles of closed ways would revegetate within approximately two to three growing seasons. The 17 miles of open roads would not revegetate due to periodic vehicle travel.

Conclusion: The 33 miles of closed ways would revegetate within 2 to 3 years. There would be little or no change in the vegetation over the remainder of the WSA.

Impacts on Wildlife

Wildlife habitat for a summer population of 1,000 deer, 150 antelope and 200 bighorn sheep and a winter population of 800 deer, 25 antelope and 200 bighorn sheep would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives. Habitat of sage grouse, Whitehorse cutthroat trout and Alvord chub would also be maintained. The development of 10 instream structures in Denio Creek and 10 in Van Horn Creek (two projects) would not be allowed and the reintroduction of Whitehorse cutthroat trout into upper Denio Creek and Van Horn Creek would not occur due to inadequate habitat without the structures. A corresponding increase in Whitehorse cutthroat trout would be foregone. The reintroduction of bighorn sheep in the Van Horn Creek area would occur with a corresponding increase in bighorns in the WSA.

The proposed reduction in livestock use would not affect riparian and fish habitat because cattle would continue to make heavy use of these areas even with the reduction. Also sage grouse would not be affected by the reduction in cattle use because cattle use would continue to be heavy on meadows, a preferred sage grouse habitat. A slight improvement in nongame habitat could occur due to reduced cattle use because ground cover that is used by ground nesting songbirds and small mammals would increase.

The closure of 33 miles of ways would greatly reduce disturbance to deer and antelope during the hunting season. Less disturbance to chukars and valley quail would also occur.

Conclusion: Wildlife habitat and populations would be maintained on 72,690 acres designated wilderness. Disturbance to wildlife would be greatly reduced by the closure of ways. The reintroduction of Whitehorse cutthroat trout into upper Denio Creek and Van Horn Creek would not occur as a result of precluding the construction of instream structures. Bighorn sheep would be reintroduced in the Van Horn Creek area.

Impacts on Watershed

Due to the continued grazing on the riparian areas during the critical growing period, the trend of all of the perennial drainages would still be down with the exception of Denio Creek. Water quality would remain poor due to the high fecal coliform count, and more areas of erosion would be evident along streams and in meadows throughout the WSA.

Conclusion: With the exception of Denio Creek, poor water quality and active erosion would continue on the perennial streams and meadows.

Impacts on Livestock Grazing

Based on preliminary studies, a reduction in livestock grazing use of 795 AUMs from the baseline level is projected, depending on the results of monitoring. This reduction would result in a total livestock grazing use of 3,635 AUMs in the WSA. In the absence of new range improvements designed to increase available forage, this reduction would be necessary to offset a shortage of available forage.

In the Pueblo-Lone Mountain allotment, livestock grazing use would be reduced by 795 AUMs and thus the total use would change from 4,225 AUMs to 3,430 AUMs in the portion of the allotment within the WSA.

Livestock grazing use of 205 AUMs in the WSA portion of the Denio Basin allotment would remain unchanged.

Vehicle use for livestock management and facility inspection and maintenance of 4 miles of fence on 33 miles of ways would be precluded. Fence inspection and maintenance would be done on foot or by the use of riding or pack animals. This would result in inconvenience and some increase in expense to livestock operators. Mechanized heavy equipment would be used on the average of once every 5 years to maintain four ditches totaling 4 miles and 0.7 mile of pipeline and once every 10 years to maintain six reservoirs and six springs.

Conclusion: Baseline livestock grazing use would be reduced by 795 AUMs. Vehicle use for routine livestock management and fence maintenance on 33 miles of ways would be precluded, with some inconvenience and additional expense to livestock operators.

Impacts on Recreation Use

Except for the 17 miles of dead-end roads that would remain open under the all wilderness alternative, the entire 72,690 acres of the WSA would be closed to motorized recreational use, including 33 miles of ways. The closure would reduce vehicle-oriented recreation use in the WSA from 700 visitor days per year to less than 500 visitor days per year.

While primitive recreation would be expected to increase slightly, some vehicle-oriented recreation activity would be displaced into other areas. It is estimated that the actual reduction in vehicle-oriented use, primarily hunting, would be minor due to the continued access opportunities on 17 miles of dead-end roads. Some previously vehicle-oriented recreationists may also continue to use the WSA by traveling on foot or by horseback in areas formerly served by ways.

Conclusion: Wilderness designation would result in a net reduction in the area's overall recreation use level from 700 visitor days per year to less than 500 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would decrease by 795 AUMs. Overall recreation use would decrease by 200 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $11,940 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $12,000.

Enhanced Wilderness

Recommended suitable for wilderness: 77,800 acres (assuming acquisition of 3,910 acres of private land and the addition of 5,280 acres of non-WSA public land)
Recommended nonsuitable for wilderness: 4,080 acres

Impacts on Wilderness Values

The enhanced wilderness alternative would add 77,800 acres to the NWPS, with acquisition of the 3,910 acres of private land and the addition of 5,280 acres of public lands outside the WSA. This alternative also includes the acquisition of the mineral estate of 3,875 acres of split-estate lands.Acquisition of the private land and mineral estate would prevent potential disturbance from mineral exploration on these parcels. This would improve the wilderness qualities of the area. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved in the suitable portion. Special features, including the scenic and geologic values of this impressive tilted fault-block mountain range with its high-elevation drainages, basins and meadows would be protected. The wilderness characteristics within the nonsuitable portions would not receive legislative protection. These wilderness values include some plant species of special interest, riparian areas and nongame habitat.

Naturalness

The naturalness of the area would be enhanced, by the closure of 13 dead-end roads and two loop roads (totaling 35.5 miles), in addition to 33 miles of ways. Closure of the roads and ways (influencing approximately 8,100 acres or 10.5 percent of the WSA) would allow the access routes to revegetate within two to five growing seasons, making them substantially unnoticeable.

Projected mineral exploration in the nonsuitable portion, disturbing a total of 12 surface acres, would cause short-term and localized impacts to naturalness. Required reclamation and natural revegetation would leave little long-term evidence of disturbance to naturalness.

Maintenance of 6 miles of fence would be completed using horses and pack animals; therefore, impacts would be minimal. Maintenance of four ditches totaling 4 miles and one pipeline totaling 2 miles would require use of heavy mechanized equipment approximately once every 5 years and maintenance of 10 reservoirs and six springs would require use of heavy mechanized equipment once every 10 years. This infrequent use would not prevent the ways from revegetating.

Solitude

Opportunities for solitude would be improved because the 13 dead-end roads and two loop roads would be closed in addition to the ways. Closure of interior vehicle access routes (totaling 68.5 miles) would eliminate approximately 400 visitor days of motorized recreation use.

Maintenance of four irrigation ditches (totaling 4 miles) and one pipeline (totaling 2 miles) with heavy mechanized equipment once every 5 years and maintenance of 10 reservoirs and six springs once every 10 years would cause short-term localized disturbance of solitude.

Projected mineral exploration at 50 test core drill sites in the area recommended nonsuitable would also cause short-term disturbance of solitude.

Primitive and Unconfined Recreation

The quality of primitive recreation would be improved by closing 12 dead-end roads and one loop road in addition to the ways. Closure of the 33 miles of ways and 35.5 miles of roads to motorized use would greatly increase primitive and unconfined recreation opportunities such as hiking, backpacking, hunting, horseback riding, sightseeing and photography. Some of the reduction in vehicle-oriented hunting would be offset by increased use from hunters who prefer nonmotorized access to their hunting area.

Special Features

Eliminating motorized vehicle use on 35.5 miles of roads, in addition to the 33 miles of ways, would reduce the potential for impacts to special features. The potential for impacts by incidental ORV use to plant and animal communities and species of special interest would be reduced by closing a total of 68.5 miles of interior access routes. The acquisition of 3,910 acres of private land and 3,875 acres of the mineral estate of the split-estate lands would ensure preservation of special features.

On 4,080 acres recommended nonsuitable for wilderness, some plant species of special interest as well as Alvord Chub habitat in the lower reaches of Van Horn Creek, Colony Creek and Denio Creek on the eastern side of the WSA would be subject to disturbance from potential development. However, no such development is projected to occur in the nonsuitable area.

Conclusion: Wilderness designation of 77,800 acres would protect and enhance existing wilderness values. The acquisition of 3,875 acres of mineral estate of split-estate lands would further enhance the total area by preserving wilderness values on all lands within the wilderness boundaries.

Impacts on Energy and Mineral Development

Under the enhanced wilderness alternative, 70,015 acres, plus an additional 7,785 acres of private land and mineral estate proposed for acquisition, would be closed to mineral entry.

Energy Development

Energy exploration and development would be precluded on 77,800 acres. The suitable area includes 13,790 acres of land with a moderate potential for the occurrence of geothermal resources, based on indirect evidence. Due to more favorable geothermal resources located in nearby KGRAs, no development is predicted for any lands in this WSA.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for zinc, uranium, copper, mercury, molybdenum, silver and gold would be precluded on 77,800 acres.

It is predicted that exploration, if the suitable area were to remain open to mineral entry, would prove the existence of three economical ore bodies for the production of gold, silver and mercury. Development of three projected mines, two producing gold and silver and one silver and mercury, would be precluded by wilderness designation.

Exploration would occur at 50 test core drill site locations on 4,080 acres of area recommended nonsuitable. No development is anticipated from this exploration.

Conclusion: Production of mercury, gold and silver from three projected mines would be foregone.

Impacts on Vegetation

Wilderness designation would not introduce any significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the vegetative section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid-seral to late seral stages overall. Utilization of key forage species would remain at approximately 60 to 70 percent on gentle slopes and flat areas and at 50 percent or less on the steeper sites.

The 33 miles of closed ways would revegetate within approximately two to three growing seasons. The 35.5 miles of closed roads would revegetate within two to five growing seasons.

Conclusion: The 68.5 miles of closed vehicle routes would revegetate within two to five growing seasons. There would be little or no change over the remainder of the WSA.

Impacts on Wildlife

Wildlife habitat for a summer population of 1,000 deer, 150 antelope and 200 bighorn sheep and a winter population of 800 deer, 25 antelope and 200 bighorn sheep would be maintained under wilderness designation of 77,800 acres. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives. Habitat for sage grouse, Whitehorse cutthroat trout and Alvord chub would also be maintained. The development of 10 instream structures in Denio Creek and 10 in Van Horn Creek (two projects) would not be allowed and the reintroduction of Whitehorse cutthroat trout into upper Denio Creek and Van Horn Creek would not occur due to inadequate habitat without the structures. A corresponding increase in Whitehorse cutthroat trout would be foregone. The reintroduction of bighorn sheep in the Van Horn Creek area would occur with a corresponding increase in bighorns in the WSA.

The proposed reduction in livestock use would not affect riparian and fish habitat because cattle would continue to make heavy use of these areas even with the reduction. Also, sage grouse would not be affected by the reduction in cattle use because cattle use would continue to be heavy on meadows, a preferred sage grouse habitat. A slight improvement in nongame habitat could occur due to reduced cattle use and a resulting increase in ground cover.

The closure of 33 miles of ways and 35.5 miles of road would greatly reduce disturbance to deer and antelope during the hunting seasons. Less disturbance to chukars and valley quail would also occur.

Wildlife values in the area recommended nonsuitable are 2 miles of riparian habitat and 0.2 mile of Denio Creek's Whitehorse cutthroat trout habitat. Habitat disturbance could occur in the area recommended nonsuitable; however, no surface disturbing actions are projected in that area.

Acquisitions of private property in the headwaters of Willow creek would be of particular value to bighorn sheep and deer. Bighorns and deer make heavy use of this area during the summer. Acquisition of other private properties, which contain valuable antelope, deer and sage grouse habitat, would preserve those habitats.

Seventeen miles of riparian habitat occur on the private property to be acquired. Of this, 1.4 miles of Denio Creek may be suitable habitat for Whitehorse cutthroat trout.

An estimated 10 to 15 bighorn sheep winter near Ladycomb Peak in the suitable area. This alternative would also add approximately 2,900 acres of deer winter range and 500 acres of antelope winter range on public land to the area recommended suitable.

Conclusion: Wildlife habitat and populations would be maintained on 77,800 acres designated wilderness and disturbance to wildlife would be greatly reduced. The reintroduction of Whitehorse cutthroat trout into upper Denio Creek and Van Horn Creek would not occur but bighorn sheep would be reintroduced in the Van Horn Creek area with a corresponding increase in population.

Impacts on Watershed

If the private inholdings were acquired, it would add several stream miles and some large meadows to the WSA. The present condition and trend of those areas is similar to the stream and meadows on public land because they are managed in the same manner. The water quality would remain poor due to high concentrations of fecal coliform, and more areas of erosion would be evident over time even with projected reductions in livestock grazing use. The Denio Creek watershed would continue to improve due to livestock management implementations.

Conclusion: All of the perennial drainages and meadows with the exception of those in the Denio Creek watershed, would continue to exhibit active erosion and poor water quality.

Impacts on Livestock Grazing

Based on preliminary studies, a reduction in baseline livestock grazing use of 795 AUMs is projected, depending on the results of monitoring. This reduction would result in a total livestock grazing use of 3,635 AUMs in the WSA. In the absence of new range improvements designed to increase available forage, this reduction would be necessary to offset a shortage of available forage.

In the Pueblo-Lone Mountain allotment, livestock grazing use would be reduced by 795 AUMs, thus the total use would change from 4,225 AUMs to 3,430 AUMs in the WSA portion of the allotment.

Livestock grazing use of 205 AUMs in the WSA portion of the Denio Basin allotment would remain unchanged.

Vehicle use for livestock management and facility inspection and maintenance of 6 miles of fence on 33 miles of ways and 35.5 miles of roads would be precluded. Fence inspection and maintenance would be done on foot or by the use of riding or pack animals. This would result in inconvenience and some increase in expenses to livestock operators. Mechanized heavy equipment would be used on the average of once every 5 years to maintain 2 miles of pipeline and four ditches totaling 4 miles and once every 10 years to maintain 10 reservoirs and six springs.

Conclusion: Baseline livestock grazing use would be reduced by 795 AUMs. Vehicle use for routine livestock management and fence maintenance on 33 miles of ways and 35.5 miles of roads would be precluded, causing some inconvenience and additional expense to livestock operators.

Impacts on Recreation Use

Motorized use would be precluded on 77,800 acres, including 35.5 miles of roads and 33 miles of ways. This closure would eliminate all motorized vehicle use in the area.

The quality of primitive recreation would be expected to improve and such use would increase moderately by closure of the 35.5 miles of roads and 33 miles of ways. Vehicle-oriented recreation is expected to be reduced and displaced into other areas and to be partially substituted by primitive recreation. Some vehicle-oriented recreationists, primarily hunters, may continue to use the WSA by traveling on foot or horseback. Others will find alternative areas where vehicle use is permitted. Primitive recreation activities are not expected to increase to a point where they offset the reduction in vehicle-oriented recreation. Overall recreation use would be reduced from 700 visitor days per year to approximately 400 visitor days per year.

Conclusion: Wilderness designation under the enhanced alternative would result in a net reduction in the area's overall recreation use level from 700 visitor days per year to approximately 400 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would decrease by 795 AUMs. Overall recreation use would decrease by 300 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $13,140 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $13,000.

Partial

Recommended suitable for wilderness: 43,245 acres (assuming acquisition of 1,930 acres of private land)
Recommended nonsuitable for wilderness: 31,375 acres

Impacts on Wilderness Values

This alternative would designate 43,245 acres as wilderness, assuming acquisition of 1,930 acres of private land. Wilderness values and special features such as bighorn sheep, scenic values, areas of geological interest and some plant species in the central core of the study area would be protected. Acquisition of the mineral estate of 2,440 acres of split-estate lands would enhance wilderness values.

Wilderness values on the remaining 31,375 acres would not receive special legislative protection and would be subject to the effects of projected mineral development, range and wildlife projects and motorized recreation.

Naturalness

Naturalness of the area recommended as suitable for wilderness would be preserved in its present condition.

The naturalness of the area would be enhanced in the central core of the WSA, as 10 miles of dead-end roads would be closed in addition to 24 miles of ways. Closure of the roads and ways, (influencing approximately 4,400 acres or 10.6 percent of the WSA), would allow the access routes to revegetate, making them substantially unnoticeable. Continued vehicle use on 9 miles of ways and 12 miles of roads would maintain the impact of vehicle tracks upon naturalness on approximately 3,700 acres in the nonsuitable portion.

Acquisition of private lands and the mineral estate of split-estate lands would eliminate the possibility of mineral development and the need for access to five parcels. By precluding development, the chance of additional outside sights and sounds would be diminished on 4,430 acres scattered throughout the WSA.

Maintenance of 4 miles of fence would be conducted using horses and pack animals; therefore, impacts would be minimal. Maintenance of 0.25 mile of irrigation ditch and 1.75 miles of pipeline would require use of heavy mechanized heavy equipment once every 5 years and maintenance of eight reservoirs and six springs would require use of heavy mechanized equipment once every 10 years. This infrequent use would not prevent the ways from revegetating.

The construction of several proposed projects in the nonsuitable portion would disturb a total of 3,422 surface acres and visually influence naturalness on 26,000 acres under this alternative.

The development of one spring would disturb one surface acre and visually influence naturalness on 30 acres.

The construction of 5 miles of pipeline would disturb five surface acres and indirectly influence naturalness on 500 acres. The placement of an 18,000-gallon water storage tank at the beginning of the pipeline just outside the WSA boundary would visually influence naturalness on 5,000 acres.

The construction of 26 miles of fences would disturb 26 acres and visually influence naturalness on 2,600 acres.

The development of two seedings totaling 3,140 acres in the foothills of the western ridge would visually influence naturalness on 15,700 acres.

Mineral development and associated exploration activities in the nonsuitable portion (one gold and silver mine and one silver and mercury mine) disturbing 250 surface acres would visually influence naturalness on approximately 2,500 acres or 3.3 percent of the WSA.

Solitude

Opportunities for solitude in the suitable portion would be improved because 10 miles of dead-end road would be closed in addition to 24 miles of ways. Closure of interior vehicle access routes (totaling 34 miles) would eliminate 200 visitor days of motorized recreation use. The elimination of 200 days of motorized vehicle use per year would enhance solitude on 43,245 acres designated wilderness. Maintenance of 0.25 mile of irrigation ditch and 1.75 miles of pipeline with heavy mechanized equipment once every 5 years and maintenance of eight reservoirs and six springs once every 10 years would cause short-term disturbance of solitude.

Within the 31,375 acres not designated wilderness, continued use on 9 miles of existing ways and 12 miles of existing dead-end roads and associated human activity would cause repeated short-term, local impairment of opportunities for solitude.

Projected mineral development in the upper reaches of Arizona Creek and Colony Creek would result in increased human activity and the need for increased access to development sites. This would affect the opportunities for solitude in the nonsuitable area and at the edge of the area recommended suitable.

Human activity associated with developing one spring, 5 miles of pipeline, 26 miles of fence and 3,140 acres of seeding would cause short-term disturbance of solitude.

Primitive and Unconfined Recreation

Under the partial alternative, opportunities for primitive recreation would be maintained or improved in the areas recommended suitable for wilderness. Elimination of 200 visitor days of motorized vehicle use per year on 43,245 acres designated wilderness would enhance opportunities for primitive recreation.

In the nonsuitable area, exploration and development of two projected mines, two seedings and the range projects (including one spring, 5 miles of pipeline and 26 miles of fence) would intrude on primitive and unconfined recreation activities. This intrusion, in most instances, would completely eliminate the types of opportunities in and around the area of intensive development. Changes to the natural setting would cause visitors seeking primitive and unconfined recreation to avoid this area, with the possible exception of hunting.

Vehicle use would continue on existing roads and ways in the nonsuitable portion. Such use would continue to intrude upon primitive, nonmotorized recreation opportunities such as hiking, backpacking, camping, hunting, horseback riding and sightseeing in the localized areas around the 9 miles of ways and 12 miles of roads.

Special Features

Eliminating motorized vehicle use on 24 miles of ways and 10 miles of dead-end road in the area recommended suitable would reduce this influence to the area's special features. The potential for impacts by incidental ORV use to plant and animal communities and species of special interest would be reduced by closure of the interior access routes and acquisition of 1,930 acres of private land and 2,440 acres of mineral estate. The absence of any need for motorized access to these parcels would prevent possible surface disturbance, removal of vegetation, impairment of scenic values and disruption of wildlife.

Wilderness values and special features identified within the area recommended nonsuitable would be subject to disturbance from projected activities. This acreage includes the Pueblo Foothills RNA/ACEC, Pueblo Mountain and substantial portions of the eastern and western areas of the WSA. Scenic values, including some of the area with outstanding scenery, would be adversely affected by any development (such as mining in the vicinity of Arizona Creek and Colony Creek).

Construction of access roads, transmission lines and buildings would involve removal of vegetation, some movement of soil and other surface materials and placement of human developments out of context with the present characteristic landscape.

Special features on the eastern side of the WSA such as the Whitehorse cutthroat trout, the Alvord Chub and several plant species of special interest would also be subject to disturbance from development.

The construction of 26 miles of fence in the nonsuitable portion (one extending south from near Dip Springs to the Nevada border around the proposed seedings on the western side of the WSA, part of an east-west fence across the central portion of the WSA and part of a north-south fence extending from the Roux Ranch in the north, around Pueblo Mountain, to the southern boundary near the mines above Denio Creek) would reduce scenic values by creating unnatural lines in the characteristic landscape.

The development of the two proposed seedings and construction of 5 miles of pipeline and the water storage tank in the foothills of the western ridge would also impair special features, but mainly the vistas, scenery and vegetation. Removal of the sagebrush would involve some movement of soil and surface materials and the changing of vegetative composition on the seedings towards various grass species.

Conclusion: Wilderness designation of 43,245 acres, including 1,930 acres of acquired private land, would protect existing wilderness values with probable enhancement of those values. Within the 31,375 acres not designated wilderness, projected activities would impair wilderness values directly and indirectly over approximately 29,000 acres with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

Under the partial alternative, 38,875 acres, plus an additional 4,370 acres of private land and mineral estate proposed for acquisition, would be closed to mineral entry.

Energy Development

Energy exploration and development would be precluded on 43,245 acres, assuming acquisition of the private lands and mineral estate. This alternative includes 2,560 acres of land with a moderate potential for the occurrence of geothermal resources. Due to more favorable geothermal resources located in nearby KGRA, no development is predicted for these lands.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for copper, mercury, molybdenum, silver and gold would be precluded on 43,245 acres. It is predicted that within the nonsuitable area, two ore bodies would be located and developed which would produce gold, silver and mercury. Within the portion of the WSA that would be closed to mineral entry, discovery and development of one projected gold and silver ore body would be precluded.

Conclusion: Production of silver and gold from one projected mine would be foregone in the suitable area. Production of silver, mercury and gold from two projected mines would occur in the nonsuitable area.

Impacts on Vegetation

Two brush control/seedings totaling 3,140 acres would be established in the nonsuitable portion of the Pueblo Mountains WSA, and would change the present vegetative community of big sagebrush/cheatgrass to a community dominated by crested wheatgrass.

The development of other range projects (one spring, 5 miles of pipeline and 26 miles of fence) would temporarily disturb vegetation on approximately 32 acres. The range projects, however, will provide for better distribution of livestock within the allotment and that, coupled with a 1,225 AUM reduction of livestock use, would benefit areas that presently receive heavy and severe grazing pressure every year. Rest would be provided during the growing seasons, resulting in an immediate response in the condition of the riparian and meadow areas.

The 24 miles of closed ways would revegetate within approximately two to three growing seasons. The 10 miles of closed dead-end roads would revegetate within two to five growing seasons. The ways and roads left open to vehicle use would not revegetate.

Mineral exploration would remove vegetation from approximately 37 acres. Those areas would revegetate within approximately three growing seasons following rehabilitation. Development of an open-pit gold and silver mine and an open-pit silver and mercury mine and accompanying roads and transmission lines would remove vegetation from 212 acres in the nonsuitable area.

The upland vegetation on the suitable portion of the WSA and in the nonsuitable areas not impacted by range projects or mining activity would improve by increased vigor of the key forage plants, but the ecological status, which is presently in mid- to late seral stage, would not change.

Conclusion: Vegetation would be altered on 3,140 acres while vegetation would be removed on approximately 250 acres. Thirty-four miles of vehicle routes would revegetate. The riparian and meadow vegetation in both the suitable and nonsuitable areas would improve and the ecological status would change from early seral to mid-seral in some areas and from mid-seral to late seral in others.

Impacts on Wildlife

Wildlife habitat for a summer population of 1,000 deer, 150 antelope, and 200 bighorn sheep would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives. However, 95 percent of the deer winter range that occurs along the east side of the Pueblo Mountains, a small amount of the bighorn sheep and antelope winter range and 2.2 miles of Whitehorse cutthroat trout habitat would be in the area recommended as nonsuitable. Eighteen miles of riparian habitat on public land would be recommended as nonsuitable, or 39 percent of the total riparian habitat on public land in the WSA. Habitat in areas recommended as nonsuitable would be subject to disturbance from activity related to two projected mines.

The closure of 24 miles of ways and 10 miles of road would moderately reduce disturbance to deer and antelope during the hunting season. Less disturbance to chukars and valley quail would also occur.

The development of 10 instream structures in Denio Creek and 10 in Van Horn Creek (two projects) in the area recommended suitable would not be allowed and the reintroduction of Whitehorse cutthroat trout into upper Denio Creek and upper Van Horn Creek would not occur due to inadequate habitat. A corresponding increase in Whitehorse cutthroat trout would be foregone. The reintroduction of bighorn sheep in the Van Horn Creek area would occur with a corresponding increase in population.

Acquisition of private property in the headwaters of Willow Creek would be particularly valuable to bighorn sheep and deer. Bighorns and deer make heavy use of this area during the summer. Acquisition of other private property which contain valuable antelope, deer and sage grouse habitat, would preserve those habitats. Nine miles of riparian habitat also occurs on the private property to be acquired.

In the area recommended nonsuitable, The sagebrush control and seeding proposed for the western edge of the WSA would be developed, improving habitat for up to 50 antelope, but most nongame species would have their habitat damaged on the 3,140 acres of proposed sagebrush control and seeding. Sage grouse do not use that area and would not be affected.

Proposed water developments for livestock would provide additional water for chukar, nongame species and antelope in the area recommended nonsuitable.

Over all of the WSA, the proposed reduction in livestock use and control of their use would allow an improvement in riparian habitat and meadows. This would improve sage grouse habitat through meadow improvement. Also, an improvement in nongame habitat would occur due to additional herbaceous cover on the uplands and improved riparian habitat. Improved riparian habitat would also benefit Whitehorse cutthroat trout in Van Horn Creek and Denio Creek by lowering water temperatures, providing cover and reducing sediment. Alvord chub habitat would also improve by reducing sediment and prolonging streamflows.

This alternative would conflict with ODFW's objective for deer in the Beatys Butte Wildlife Management Unit due to projected mining in the nonsuitable area. The development of projected mines would primarily impact wintering deer by destroying and disturbing their habitat. A 10 percent reduction in wintering deer (80 deer) due to mining is projected. Antelope and bighorn sheep would not be impacted.

Although chukars are abundant in these areas, mining activities would cause populations to decrease slightly. Some small nongame mammals would perish due to mining.

Conclusion: Wildlife habitat and populations would be maintained on 43,245 acres designated wilderness. The reintroduction of Whitehorse cutthroat trout into upper Denio Creek and Van Horn Creek would not occur but bighorn sheep would be reintroduced in the Van Horn Creek area. Riparian habitat, fish habitat and sage grouse habitat would improve. Habitat for 50 antelope would also improve, but a reduction in 80 wintering deer and damage to 3,140 acres of nongame species habitat is projected.

Impacts on Watershed

Acquisition of 1,930 acres of private land would add 9 miles of perennial stream and several large meadow areas to the WSA. The 1,225-AUM reduction along with the range improvements that would be constructed within the nonsuitable portion of this WSA, would control grazing within both the suitable and nonsuitable portions of the WSA and begin to stabilize the banks and reduce sediment on about 20 miles of perennial streams through reestablishment of riparian vegetation. Fecal coliform counts, in all streams, would drop because livestock would be present for a limited period of time.

The projected mining activity, planned for two sites in the nonsuitable portion of the WSA, would produce fine sediment and toxic materials, reducing water quality on two of the perennial streams (totaling 7 miles). There would be little change in the watershed on the rest of the WSA.

Conclusion: Water quality would improve on all streams except for 7 miles affected by mining activity. Streambanks would begin to stabilize on about 20 miles of perennial stream. The remainder of the WSA would show little change.

Impacts on Livestock Grazing

Based on preliminary studies, a reduction in baseline livestock grazing use of 170 AUMs is projected, depending on the results of monitoring. This reduction would result in a total livestock grazing use of 4,260 AUMs in the WSA.

In the Pueblo-Lone Mountain allotment, range improvements would be constructed in the area designated nonsuitable for wilderness, making 625 AUMs available to partly offset a shortage of available forage. Livestock grazing use would be reduced by 170 AUMs, changing the total use from 4,225 AUMs to 4,055 AUMs in the WSA portion of the allotment.

Livestock grazing use of 205 AUMs in the WSA portion of the Denio Basin allotment would remain unchanged.

One spring, 5 miles of pipeline, 26 miles of fence and 3,140 acres of seeding would be developed. An 18,000-gallon water storage tank would be constructed at the beginning of the pipeline a short distance outside the boundary of the WSA.

In the suitable area, vehicle use for livestock management and facility inspection and maintenance of 4 miles of fence on 24 miles of ways and 10 miles of dead-end roads would be precluded. Fence inspection and maintenance would be done on foot or by the use of riding or pack animals. This would result in some inconvenience and increase in expenses to livestock operators.

Mechanized heavy equipment would be used on the average of once every 5 years to maintain 0.25 miles of ditch and 1.75 miles of pipeline and once every 10 years to maintain eight reservoirs and six springs.

Conclusion: Baseline livestock use would be reduced by an estimated 170 AUMs. Vehicle use for routine livestock management would be precluded on 24 miles of ways and 5 miles of dead-end roads with some inconvenience and additional expense to livestock operators. Development of range projects in the nonsuitable area would prevent further livestock use reductions of approximately 625 AUMs.

Impacts on Recreation Use

Within the suitable area, motorized vehicle use would be precluded on 43,245 acres, including 24 miles of ways and 10 miles of dead-end road. This would result in a reduction of 200 visitor days. Primitive recreation activity would increase slightly within the suitable area as a result of increased attractiveness for this purpose due to road and way closures. The access provided to the suitable area by roads and ways remaining open within the adjacent nonsuitable portion of the WSA would also be a contributing factor to this use.

Within the nonsuitable area, primitive recreation use would decline moderately over time as a result of projected mineral and livestock developments.

Current recreational use is estimated to be 700 visitor days per year for the entire WSA with 300 visitor days attributed to primitive recreation activities. Total use would be reduced to approximately 500 visitor days per year.

Conclusion: This alternative would result in a net reduction of the overall recreation use level, from 700 visitor days per year to approximately 500 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would decrease by 170 AUMs. Projected energy and mineral development would amount to two metallic mines. Overall recreation use would decrease by 200 visitor days per year. Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $4,440 per year plus an unknown level of increase attributable to the projected energy and mineral development.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $4,500.

Proposed Action

Recommended suitable for wilderness: 26,150 acres
Recommended nonsuitable for wilderness: 46,540 acres

Impacts on Wilderness Values

This alternative would designate 26,150 acres of wilderness and wilderness values and special features in the suitable area including naturalness, solitude, recreation and scenic values would be protected. Acquisition of the mineral estate of 1,740 acres of split-estate lands would enhance wilderness values.

Under the proposed action, 46,540 acres would not be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation and the area's special features including outstanding scenic values, geologic values such as outcrops of pre-Tertiary granite rocks and metamorphosed conglomerate, habitat for Whitehorse cutthroat trout and botanical values associated with the RNA would be subject to the effects of projected management actions.

Naturalness

Naturalness in the area recommended as suitable for wilderness would be preserved in its present condition.

Acquisition of the mineral estate of split-estate lands would eliminate the possibility of development and the need for access to three parcels. By precluding development, the chance of additional outside sights and sounds would be diminished on the 1,740 acres scattered throughout the WSA.

Maintenance of a portion of a fence totaling 1 mile would be conducted using horses and pack animals; therefore, impacts would be minimal. Maintenance of one reservoir and four springs would require use of heavy mechanized equipment once every 10 years. This infrequent use would not prevent the ways from revegetating.

Naturalness would be slightly enhanced as a result of eliminating most motorized vehicle use within the 26,150 acres of WSA recommended suitable for wilderness. Closure of 10.75 miles of ways and 0.75 mile of dead-end road in the area recommended suitable would allow them to revegetate and become substantially unnoticeable in two to five growing seasons.

Continued use on 22.25 miles of ways and 16.25 miles of roads would maintain the impact of vehicle tracks upon naturalness on approximately 6,000 acres in the nonsuitable portions.

The naturalness of Pueblo Mountain and substantial portions of the eastern and western areas of the WSA would be subject to disturbance from other resource uses on the 46,540 acres recommended as nonsuitable for wilderness.

The construction and development of range projects, including one spring, 5 miles of pipeline, 26 miles of fence, two seedings and three reservoirs would disturb 3,178 surface acres and visually influence naturalness on approximately 19,000 acres. An 18,000-gallon water storage tank placed at the beginning of the pipeline just outside the WSA boundary would visually influence an additional 5,000 acres.

The construction of 10 instream structures in Denio Creek to enhance fisheries would disturb 1 surface acres and visually influence naturalness on 5 acres.

Mineral development and associated exploration activities in the nonsuitable portion (one gold and silver mine and one silver and mercury mine) disturbing 250 surface acres would visually influence naturalness on approximately 2,500 acres or 3.3 percent of the WSA.

Solitude

Opportunities for solitude in the suitable portion would be improved because 0.75 mile of dead-end road would be closed in addition to the 10.75 miles of ways. Closure of interior vehicle access routes (totaling 11.5 miles) would eliminate 200 visitor days of motorized recreation use. The elimination of 200 days of motorized vehicle use per year would enhance solitude on 26,150 acres of designated wilderness.

Maintenance of four springs and one reservoir once every 10 years would cause short-term disturbance of solitude, when heavy mechanized equipment is brought into the area.

Within the 46,540 acres not designated wilderness, the small projected increase in motorized vehicle use on solitude would be negligible. Continued use on 22.25 miles of existing ways and 16.25 miles of existing dead-end roads and associated human activity would cause repeated short-term, local impairment of opportunities for solitude.

Projected mineral development in the vicinity of the upper reaches of Arizona Creek and Colony Creek would result in increased human activity and the need for increased access to development sites. This would affect the opportunities for solitude in the nonsuitable area and at the edge of the area recommended suitable as wilderness.

The construction of 26 miles of fence, 5 miles of pipeline and three reservoirs and the development of one spring and two seedings (totaling 3,140 acres) and the construction of 10 instream structures would also cause short-term disturbance of solitude when heavy mechanized equipment is brought into the area.

Primitive and Unconfined Recreation

Under the proposed action, opportunities for primitive recreation would be maintained or improved in the areas recommended suitable for wilderness. Elimination of 200 visitor days of motorized vehicle use per year on 26,150 acres designated wilderness would enhance opportunities for primitive recreation.

Vehicle use would continue on existing roads and ways in the nonsuitable portion. Such use would continue to intrude upon primitive, nonmotorized recreation opportunities such as hiking, backpacking, camping, hunting, horseback riding and sightseeing in the localized areas around the 22.25 miles of ways and 16.25 miles of roads.

Exploration and development of two projected mines in the nonsuitable area would intrude on primitive and unconfined recreation activities and, in most instances, completely eliminate the types of opportunities in and around the area of intensive development. Visitors seeking primitive and unconfined recreation would tend to avoid the area.

Development of two seedings in the western edge of the WSA would intrude on primitive and unconfined recreation, and in most instances, eliminate these types of opportunities in and around the area of intensive development. Changes to the natural setting would cause visitors seeking primitive and unconfined recreation to avoid the area, with the possible exception of hunters.

Special Features

Eliminating motorized vehicle use on 10.75 miles of ways and 0.75 miles of dead-end road in the area recommended suitable would reduce this influence to the area's special features. The potential for impacts by incidental ORV use to plant and animal communities and species of special interest would be reduced by closure of the interior access routes and acquisition of 1,740 acres of mineral estate. The absence of any need for motorized access to these parcels would prevent possible surface disturbance, removal of vegetation, impairment of scenic values and disruption of wildlife.

Wilderness values and special features identified within the area recommended nonsuitable would be subject to disturbance from other resource uses and activities. This acreage includes Pueblo Foothills RNA/ACEC, Pueblo Mountain and substantial portions of the eastern and western areas of the WSA. Scenic values, including some of the area with outstanding scenery, would be impaired by projected development (such as mining in the vicinity of Arizona Creek and Colony Creek). Such development in this area would be visible from the ridges within the WSA.

Construction of access roads, transmission lines and buildings would involve removal of vegetation, some movement of soil and other surface materials and placement of human developments out of context with the present characteristic landscape.

Special features on the eastern side of the WSA such as the Whitehorse cutthroat trout, the Alvord chub and several plant species of special interest would also be subject to disturbance from development.

The construction of 26 miles of fence in the nonsuitable portion, one extending south from near Dip Springs to the Nevada border around the proposed seedings on the western side of the WSA, part of an east-west fence across the central portion of the WSA and part of a north-south fence extending from the Roux Ranch in the north, around Pueblo Mountain, to the southern boundary near the mines above Denio Creek, would reduce scenic values by creating unnatural lines in the characteristic landscape.

The development of the two proposed seedings and construction of three reservoirs and 5 miles of pipeline and water storage tank in the foothills of the western ridge would also impair the vistas, scenery and vegetation. Removal of the sagebrush would involve some movement of soil and surface materials and the changing of vegetative composition on the seedings towards various grass species.

Conclusion: Wilderness designation of 26,150 acres would protect existing wilderness values with probable enhancement of those values. Within the 46,540 acres not designated wilderness, projected activities would impair wilderness directly and indirectly over approximately 30,000 acres with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

Under the proposed action, 24,410 acres, plus an additional 1,740 acres of mineral estate of split-estate proposed for acquisition, would be closed to mineral entry.

Energy Development

Energy exploration and development would be precluded on 26,150 acres, assuming acquisition of the mineral estate of 1,740 acres of split-estate lands. Suitable lands under this alternative include 2,490 acres with a moderate potential for the occurrence of geothermal resources. Nonsuitable lands include 15,380 acres with a moderate rating. Due to more favorable geothermal resources located in a nearby KGRA, no development is predicted.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for copper, mercury, molybdenum, silver and gold would be precluded on 26,150 acres. In the nonsuitable area it is predicted that two ore bodies producing gold, silver and mercury would be located and developed. Within the suitable area, however, development of one projected gold and silver mine would be precluded.

Conclusion: Wilderness designation would result in foregone production from one projected silver and gold mine. Production of silver, mercury and gold from two projected mines would occur in the nonsuitable area.

Impacts on Vegetation

Two brush control/seedings totaling 3,140 acres would be established in the nonsuitable portion of the Pueblo Mountain WSA, and would change the present vegetative community of big sagebrush/cheatgrass to a community dominated by crested wheatgrass. The vegetative composition as described in the vegetative section of the Affected Environment, would not substantially change on the balance of the WSA, now would the ecological status which is currently in the mid-seral to late seral stages overall.

The development of other range projects (1 spring, 3 reservoirs, 5 miles of pipeline and 26 miles of fence) would temporarily disturb vegetation on approximately 38 acres. The range projects, however, will provide for better distribution of livestock within the allotment and that, coupled with a 1,055 AUM reduction of livestock use would benefit areas that presently receive heavy and severe grazing pressure every year. Rest would be provided during the growing seasons, resulting in an immediate response in the condition of the riparian and meadow areas.

The 10 instream fishery structures (one project) would disturb a total of 1 acre in the riparian zone of one drainage. The 10 sites would revegetate within approximately two growing seasons.

The 10.75 miles of closed ways would revegetate within approximately two to three growing seasons. The .75 mile of closed dead-end road, would revegetate within two to five growing seasons. The ways and roads left open to vehicle use would not revegetate.

Mineral exploration would remove vegetation from approximately 37 acres. Those areas would revegetate within approximately three growing seasons following rehabilitation. Development of an open-pit gold and silver mine and an open-pit silver and mercury and accompanying roads and transmission lines would remove vegetation from 212 acres in the nonsuitable area.

The upland vegetation on the suitable portion of the WSA and on the nonsuitable areas not impacted by range projects or mining activity would improve by increased vigor of the key forage plants, but the ecological status, which is presently in mid- to late seral stage would not change.

Conclusion: Vegetation would be altered on 3,140 acres while vegetation would be removed on approximately 250 acres. Disturbances created by range and wildlife developments would revegetate as well as 11.5 miles of roads and ways closed to vehicle use. The riparian and meadow vegetation in both the suitable and nonsuitable areas would improve and the ecological status would change from early seral to mid-seral in some areas and from mid-seral to late seral in others.

Impacts on Wildlife

Wildlife habitat for a summer population for 1,000 deer, 150 antelope and 200 bighorn sheep would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives. However, all of the deer, antelope and bighorn sheep winter range and Whitehorse cutthroat trout habitat that occurs in the WSA would be recommended nonsuitable. Thirty-four miles of riparian habitat on public land would be recommended as nonsuitable, or 60 percent of the total riparian habitat on public land in the WSA.

Over all the WSA, the proposed reduction in livestock use and control of their use would allow an improvement in riparian habitat and meadows. This would improve sage grouse habitat through meadow improvement. Also improvement in nongame habitat would occur due to additional herbaceous cover on the uplands and improved riparian habitat. Improved riparian habitat would also benefit Whitehorse cutthroat trout in Van Horn Creek and Denio Creek by lowering water temperatures, providing cover and reducing sediments. Alvord chub habitat would also improve by reducing sediment and prolonging streamflows.

In the suitable area, the closure of 10.75 miles of ways and 0.75 mile of dead-end road, would slightly reduce disturbance to deer and antelope during the hunting season.

In the area recommended suitable for wilderness, 10 instream structures proposed for Van Horn Creek would not be allowed and improved habitat for Whitehorse cutthroat trout would be foregone. Whitehorse cutthroat trout would not be reintroduced into upper Van Horn Creek due to inadequate habitat. The reintroduction of bighorn sheep in the Van Horn Creek area would occur with a corresponding increase in bighorns in the WSA.

In the area recommended nonsuitable for wilderness, the development of 10 instream structures (one project) in upper Denio Creek would be allowed, improving habitat for Whitehorse cutthroat trout and they would be reintroduced in this part of the stream. The 10 instream structures in Van Horn Creek would not be allowed and the introduction of Whitehorse cutthroat trout in Van Horn Creek would be foregone. The reintroduction of bighorn sheep in the Van Horn Creek area would occur with a corresponding increase in bighorns in the WSA.

In the area recommended nonsuitable for wilderness, two projected sagebrush control and seeding projects on the western edge of the WSA would improve habitat for up to 50 antelope, but most nongame species would have their habitat damaged on the 3,140 acres treated. Sage grouse do not use that area and would not be affected.

Proposed water developments for livestock would also provide additional water sources for sage grouse, chukars, nongame species, and antelope.

This alternative would conflict with ODFW's objective for deer in the Beatys Butte Wildlife Management Unit due to projected mining. The development of projected mines would primarily impact wintering deer by destroying and disturbing their habitat. A 10 percent reduction in wintering deer (80 deer) due to mining is projected. Antelope and bighorn sheep would not be impacted.

Although chukars are abundant in these areas, mining activities would cause populations to decrease slightly. Some small nongame mammals would perish due to mining.

Conclusion: Wildlife habitat and populations would be maintained on 26,150 acres designated wilderness. Whitehorse cutthroat trout would be reintroduced into upper Denio Creek, but not in upper Van Horn Creek. The construction of instream structures in upper Denio Creek would occur, but would be precluded in upper Van Horn Creek. Bighorn sheep would be reintroduced in the Van Horn Creek area. Riparian habitat, fish habitat and sage grouse habitat would improve. Habitat for 50 antelope would also improve, but a reduction in 80 wintering deer and damage to 3,140 acres of nongame species habitat is projected.

Impacts on Watershed

The range improvements established in the nonsuitable portion of the WSA along with 1,055 AUMs of livestock reduction, would control livestock grazing in the suitable area. The resulting management would lower the fecal coliform levels in 57 miles of streams by shortening the grazing season and would arrest the active headcutting in the streambanks and meadows by reestablishing riparian vegetation.

The two projected open-pit mining operations would produce fine sediment and toxic materials, reducing water quality on 7 miles of two perennial streams located in the nonsuitable portion of the WSA.

Conclusion: Most of the perennial drainages and most of the meadows in the suitable portion of the WSA would begin to stabilize under improved livestock management. Water quality on 7 miles of two perennial streams would be reduced due to projected open-pit mining activity.

Impacts on Livestock Grazing

Livestock use would remain at the baseline level of 4,430 AUMs in the WSA.

In the Pueblo-Lone Mountain allotment, range improvements would be constructed in the area designated nonsuitable for wilderness, making 795 AUMs available to offset a shortage of available forage. Livestock grazing use would be 4,225 AUMs in the WSA portion of the Pueblo-Lone Mountain allotment.

Livestock grazing use of 205 AUMs in the WSA portion of the Denio Basin allotment would remain unchanged.

One spring, three reservoirs, 5 miles of pipeline, 26 miles of fence and 3,140 acres of seeding would be developed. An 18,000-gallon water storage tank would be constructed at the beginning of the pipeline a short distance outside the boundary.

In the suitable area, vehicle use for livestock management and facility inspection and maintenance of 1 mile of fence on 10.75 miles of ways and 0.75 mile of dead-end road would be precluded. Fence inspection and maintenance would be done on foot or by the use of riding or pack animals. This would result in some inconvenience and increase in expenses to livestock operators. Mechanized heavy equipment would be used on the average of once every 10 years to maintain one reservoir and four springs.

Conclusion: Livestock use would remain at the baseline level of 4,430 AUMs as a result of constructed projects. Vehicle use for routine livestock management would be precluded on 10.75 miles of ways and 0.75 mile of road, causing some inconvenience and additional expense to livestock operators.

Impacts on Recreation Use

Motorized vehicle use would be precluded on 26,150 acres, including 0.75 mile of dead-end road and 10.75 miles of ways.

Vehicle-oriented recreation would be eliminated within the area recommended suitable and would be displaced into other areas. A reduction of approximately 200 visitor days within the WSA would occur. This would improve the quality of primitive recreation, which would increase slightly. Some of the vehicle-oriented users would continue to use the area, traveling by foot or horseback.

Primitive recreation would decline moderately in the nonsuitable area as a result of the projected mineral and livestock developments.

Primitive recreation would increase slightly in the suitable area, but would not be sufficient to offset the reduction in vehicle-oriented recreation. Current recreational use is estimated to be 700 visitor days per year for the entire WSA, with 300 visitor days attributed to primitive recreation activities.

Conclusion: This alternative would result in a net reduction of the area's overall recreation use level, from 700 visitor days per year to approximately 500 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 4,430 AUMs. Projected energy and mineral development would amount to two metallic mines. Overall recreation use would decrease by 200 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $2,400 per year plus an unknown level of increase attributable to the projected energy and mineral development.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $2,500.

No Wilderness/No Action

Recommended suitable for wilderness: 0 acres
Recommended nonsuitable for wilderness: 72,690 acres

Impacts on Wilderness Values

Under this alternative, the entire 72,690 acres would not be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation and the area's special features including outstanding scenic values, geologic values of the Pueblo Mountain range and a variety of plant and animal life would be subject to the effects of projected management actions.

Naturalness

The naturalness of the area's topographic features, the north-south ridges, Pueblo Mountain, drainages and canyons and high basins and meadows would continue to be impacted by vehicle use.

Continued vehicle use on 33 miles of ways and 17 miles of dead-end roads would maintain the impact of vehicle tracks upon naturalness on approximately 8,100 acres (11.1 percent of the WSA).

All projected actions, including range improvements, water developments and mineral exploration and development would be allowed under the no wilderness alternative. These activities would affect naturalness to some degree by disturbing native vegetation or by altering the existing contour of the land.

The construction and development of range projects, including one spring, 5 miles of pipeline, 34 miles of fence, two seedings and three reservoirs would directly disturb a total of 3,186 acres and visually influence naturalness on approximately 20,000 acres. An 18,000-gallon water storage tank placed at the beginning of the pipeline just outside the WSA boundary would visually influence naturalness on 5,000 acres.

The construction of 20 instream structures (two projects) to enhance fisheries would disturb 2 surface acres and visually influence naturalness on 10 acres.

Projected mineral development and associated exploration activities (two gold and silver mines and one silver and mercury mine) disturbing 370 surface acres would indirectly influence naturalness on approximately 3,700 acres or five percent of the WSA.

Solitude

Continued vehicle use on 33 miles of existing ways, 17 miles of existing dead-end roads and associated human activity would cause repeated, short-term local impairment of opportunities for solitude. Long-term impairment of solitude would be evident when the projected mines are constructed and vehicles and heavy equipment are in the area of the upper reaches of Arizona Creek, Colony Creek and Denio Creek.

The construction of 34 miles of fence, 5 miles of pipeline and three reservoirs and the development of one spring and two seedings and the construction of 20 instream structures would also cause short-term disturbance of solitude when heavy mechanized equipment is brought into the area.

Primitive and Unconfined Recreation

Under this alternative, opportunities for primitive recreation would be reduced by projected mining activities and development of range improvement projects.

Vehicle use would continue on existing roads and ways. Such use would intrude upon primitive, nonmotorized recreation opportunities such as hiking, backpacking, camping, hunting, horseback riding and sightseeing in the localized areas around the 33 miles of ways and 17 miles of dead-end roads.

Exploration and development of three proposed mines would intrude on primitive and unconfined recreation activities and, in most instances, completely eliminate the types of opportunities in and around the area of intensive development. Visitors seeking primitive and unconfined recreation would tend to avoid the area.

Development of two seedings in the western edge of the WSA and several livestock facilities would intrude on primitive and unconfined recreation, and in most instances, eliminate these types of opportunities in and around the area of intensive development. Changes to the natural setting would cause visitors seeking primitive and unconfined recreation to avoid this area, with the possible exception of hunting.

Special Features

Continued vehicle use of existing roads and ways would maintain the impacts upon special features including geologic features, vistas, wildlife values, outstanding scenery and vegetation. These impacts include soil compaction, rutting of riparian/meadow areas, impairment of scenic vistas and minor seasonal disturbance of deer and antelope.

Mineral exploration would result in minimal short-term disturbance, but more long-term disturbance from development of three mines could be expected to impact vistas, scenery and vegetation in the vicinity of the upper reaches of Arizona Creek, Colony Creek and Denio Creek as well as the values of the surrounding higher elevations.

Construction of access roads, transmission lines and buildings would involve removal of vegetation, some movement of soil and other surface materials and placement of human developments out of context with the present characteristic landscape.

The construction of 34 miles of fence, one extending south from near Dip Springs to the Nevada border around the proposed seedings on the western side of the WSA, an east-west fence across the central portion of the WSA and a north-south fence extending from the Roux Ranch in the north, around Pueblo Mountain, to the southern boundary near the mines above Denio Creek, would reduce scenic values by creating unnatural lines in the characteristic landscape.

The development of the two proposed seedings and construction of three reservoirs and 5 miles of pipeline and water storage tank in the foothills of the western ridge would also impair the vistas, scenery and vegetation. Removal of the sagebrush would involve some movement of soil and surface materials and the changing of vegetative composition towards various grass species on the seedings.

Some of the area's important special features, such as geologic features, wildlife values (Whitehorse cutthroat trout, Alvord chub, bighorn sheep and deer winter range), plant species of special interest and scenery, would be affected. Although the RNA/ACEC would emphasize the protection of some plant and animal species and communities, they could still be subject to disturbing activities because the area would not be withdrawn from mineral location and leasing. However, mining activities are not projected within the RNA/ACEC.

Conclusion: In the absence of wilderness designation, projected activities and continued uses would both directly and indirectly impair wilderness values over approximately 32,000 acres with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

The entire 72,690 acres would be remain open to mineral exploration and development.

Energy Development

This alternative includes 17,870 acres of land with a moderate potential for the occurrence of geothermal resources. Due to more favorable geothermal resources located in a nearby KGRA, no development is predicted.

Conclusion: No impact on energy development is expected.

Mineral Development

Projected exploration for copper, mercury, molybdenum, silver and gold would be permitted. It is predicted that exploration would prove the existence of three economical ore bodies for the production of gold, silver and mercury. Three mines, two producing gold and silver and one producing mercury and silver, would result from these discoveries.

Conclusion: Production of gold, silver and mercury from three projected mines would occur.

Impacts on Vegetation

Two brush control/seedings totaling 3,140 acres would be established, changing the vegetative community from big sagebrush/cheatgrass to crested wheatgrass. The vegetative composition as described in the vegetative section of the Affected Environment, would not substantially change on the balance of the WSA nor would the ecological status which is currently in the mid-seral to late seral stages overall.

The development of other range projects (one spring, three reservoirs, 5 miles of pipeline and 34 miles of fence) would temporarily disturb vegetation on approximately 46 acres. The range projects, however, would provide for better distribution of livestock within the allotment and that, coupled with a 1,055-AUM reduction of livestock use would benefit areas that presently receive heavy and severe grazing pressure every year. Rest would be provided during the growing season, resulting in an immediate response in the condition of the riparian and meadow areas.

The 20 instream structures (two projects) would disturb 2 acres in the riparian zones of two drainages. The 20 sites would revegetate within approximately two growing seasons.

The 33 miles of ways and 17 miles of dead-end roads would remain open to motorized vehicle use and would not revegetate.

Mineral exploration would remove vegetation from approximately 59 acres. Those areas would revegetate within approximately three growing seasons following rehabilitation. Development of the gold and silver mines and accompanying roads and transmission lines would remove vegetation from 198 acres, while development of a silver and mercury mine would remove vegetation from 109 acres.

The upland vegetation not impacted by range projects or mining activity would improve by increased vigor of the key forage plants, but the ecological status, which is presently in mid- to late seral stage would not change.

Conclusion: Vegetation would be altered on 3,140 acres and vegetation would be removed on approximately 300 acres. Disturbances created by other range and wildlife projects along with mineral exploration would eventually revegetate. The riparian and meadow vegetation would improve and the ecological status would change from early to mid-seral in some areas and from mid-seral to late seral in others.

Impacts on Wildlife

This alternative would conflict with ODFW objectives for deer in the Beatys Butte Wildlife Management Unit due to projected mining on deer summer and winter range. Similarly, ODFW's goal of 200 bighorn sheep in the Pueblo Mountains might not be fully attained with mining on bighorn range. The mine projected for the south-central portion of the WSA is in an area used by approximately 10 to 15 summering bighorn sheep. Up to 25 bighorn sheep winter to the west of the crest of Pueblo Mountains near this projected mine. Mining development would impact habitat for these species and nongame species. Road construction would attract additional visitor use and cause additional disturbance to wildlife. A reduction of 15 percent of the summer deer (150 deer), 15 percent of the wintering deer (120 deer) and 40 percent of the bighorn sheep (10 bighorns) is projected due to the three proposed mines.

Two fishery projects would improve Whitehorse cutthroat trout habitat in Van Horn Creek and Denio Creek. The reintroduction of Whitehorse cutthroat trout into the upper reaches of Denio Creek and Van Horn Creek and a corresponding increase in trout would occur. Bighorn sheep would be reintroduced into the Van Horn Creek area and would increase.

The two brush control and seeding projects proposed for the western edge of the WSA would improve habitat for up to 50 antelope, but most nongame species would have their habitat damaged on the 3,140 acres treated. Sage grouse do not use that area and would not be affected.

Proposed water developments for livestock would also provide additional water sources for chukars, nongame species and antelope.

Livestock management would improve riparian habitat, fish habitat, meadows and sage grouse habitat. Improved riparian habitat would benefit Whitehorse cutthroat trout in Van Horn Creek and Denio Creek by lowering water temperatures, providing cover and reducing sediment. Alvord chub habitat would also improve by reducing sediment and prolonging streamflows.

Conclusion: Most wildlife species habitats and populations could be maintained at present levels over most of the WSA. The proposed reintroduction of Whitehorse cutthroat trout in upper Denio Creek and Van Horn Creek and bighorn sheep in the Van Horn Creek area would occur. Cutthroat trout habitat would be improved in Van Horn Creek and Denio Creek. Riparian habitat, fish habitat and sage grouse habitat would improve. Habitat for 50 antelope would also improve, but a reduction in 150 summering deer, 120 wintering deer, 10 bighorn sheep and damage to 3,140 acres of nongame species habitat is projected.

Impacts on Watershed

The projected range improvements would be constructed, providing livestock management, and improving the watershed condition. Fecal coliform counts would be reduced on 57 miles of streams because the livestock would be grazing for a shorter period and headcuts in streambanks and meadows would begin healing as riparian vegetation became reestablished.

The three open-pit mines would reduce water quality on 13 miles of three perennial drainages due to production of toxic materials and fine sediments.

Conclusion: Headcuts in perennial streams and meadows would begin to heal and fecal coliform counts would drop on 57 miles. Projected mining activity would reduce water quality on 13 miles of three perennial streams.

Impact on Livestock Grazing

Livestock use would remain at the baseline level of 4,430 AUMs in the WSA.

In the Pueblo-Lone Mountain allotment, all projected range improvements would be constructed, making 795 AUMs available to offset a shortage of available forage. Livestock grazing use would be 4,225 AUMs in the WSA portion of the allotment.

Livestock grazing use of 205 AUMs in the WSA portion of the Denio Basin allotment would remain unchanged.

One spring, three reservoirs, 5 miles of pipeline, 34 miles of fence and 3,140 acres of seeding would be constructed. An 18,000-gallon water storage tank would be constructed at the beginning of the pipeline a short distance outside the WSA boundary.

Vehicle use for livestock management and maintenance of facilities would continue on 33 miles of ways and 17 miles of dead-end roads.

Conclusion: Livestock use would remain at the baseline level of 4,430 AUMs due to constructed projects. Vehicle use for routine livestock management would continue on 33 miles of ways and 17 miles of dead-end roads.

Impacts on Recreation Use

Motorized recreation use would continue on 72,690 acres, with most use occurring on 33 miles of ways and 17 miles of dead-end roads.

Primitive recreation would decline moderately as a result of a projected increase in vehicle-oriented recreation and projected mineral and livestock developments. The reduction in the area's primitive recreation use level would be offset by the increase in motorized recreation use, but overall recreation use would remain at 700 visitor days per year.

Conclusion: The area's recreation use level of 700 visitor days per year would not be substantially affected. Primitive recreation would decline moderately as a result of the projected increase in vehicle-oriented recreation and projected mineral and livestock developments.

Impacts on Local Personal Income

Livestock grazing would remain at 4,430 AUMs. Projected energy and mineral development would amount to three metallic mines. Overall recreation use would remain at 700 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be an unknown level of increase attributable to the projected energy and mineral development.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by an unknown amount above the current level of approximately $61,500.

Unavoidable Adverse Impacts of the Proposed Action

Some mineral exploration and development of one projected gold and silver mine would be foregone. Vehicle use would be excluded on 26,150 acres, reducing opportunities for those who prefer this type of recreation. There would be some increase in livestock management costs as a result of closing 10.75 miles of ways and 0.75 miles of roads.

On the 46,540 acres recommended nonsuitable for wilderness, mineral and range development activities would lead to unavoidable adverse impacts to wilderness values as a result of approximately 3,400 acres of surface disturbance and vegetative alteration which would visually influence approximately 30,000 acres.

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity

Under the Proposed Action, all short-term uses would continue and future development options, including mineral exploration and development and range developments, would remain open in the area recommended nonsuitable. Long-term productivity of wilderness values would be directly lost on 250 surface acres from mining development and 3,178 surface acres from range developments with further declines from other uses over the long term. Changes to the natural and visual character of the land would influence approximately 30,000 acres in the nonsuitable portion of the WSA.

The long-term productivity of wilderness values would be preserved on 26,150 acres in the suitable area.

Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, mineral development would result in an irreversible commitment of the wilderness resource on 250 acres as well as an irretrievable commitment of the mineral resources. Livestock and wildlife developments and vehicle use would visually influence wilderness values on an additional 27,500 acres.

On the 26,150 acres recommended suitable for wilderness, there would be no irreversible or irretrievable commitment of the wilderness values or any other resource.

5. Wilderness Manageability and Rationale For the Proposed Action

Manageability of the Area as Wilderness

The areas recommended as suitable would be manageable as wilderness under all of the wilderness alternatives. Some manageability problems could occur under the all wilderness alternative due to the private inholdings and split-estate lands, two boundary parcels of private land, and dead-end roads.

The problems would be associated with possible development of mineral resources on the split-estate or private lands, or other uses of the private lands, and the need for continued or additional access. At this time there is no development projected for any of these parcels in the foreseeable future. However, all of the private land and most of the split-estate land is within the area of high potential for metals.

Boundary location and identification under the all wilderness alternative would also present some manageability problems. This is especially true in the north-central portion of the WSA where adjacent private lands form a large part of the boundary. Also, on the eastern side of the WSA, private land and past mineral development activities are adjacent to the boundary. Minor boundary adjustments would improve the manageability of the area by avoiding the private lands.

There are no manageability problems expected under the enhanced wilderness alternative, the partial alternative or the proposed action. Acquisition of private and split-estate lands and road closures would eliminate the manageability problems of the all wilderness alternative.

The enhanced, partial and proposed action alternatives would improve the manageability of Pueblo Mountains WSA by eliminating vehicles on the dead-end roads within the area, and by eliminating the potential for development of and the need for access to the split-estate land and private inholdings. The enhanced alternative would also improve manageability of the wilderness by eliminating a relatively small amount of land on the eastern side of the WSA and establishing the boundary along a contour which could be more readily identified. It would also avoid some small amounts of private land and several mining claims. Lands along the southern and eastern boundary would be recommended nonsuitable for wilderness in the enhanced alternative because of manageability problems.

Most of the area with high potential for the occurrence of metals would not be excluded under the partial and proposed action alternatives. The entire eastern two thirds of the WSA, from the crest of the western ridgeline to the eastern boundary, has been classified as having high metallic mineral potential. Two areas extending into the WSA from the north are classified as "Areas of Critical Mineral Potential." An alternative designed to exclude all of the high mineral potential area would leave only the summit and part of the western slope of the western ridge. This would not retain enough suitable area for it to be considered for wilderness designation.

Under the partial and proposed action alternatives, the summit of the western ridge, the central basins and meadows and the western slope of the eastern ridge are proposed for wilderness designation. Manageability of this area for wilderness would be difficult because the area to the east of the eastern ridge would be open to mining and subject to surface disturbance. The proposed range developments to the west of the western ridge would also be highly visible from that ridge.

Rationale for the Selection of the Proposed Action

The proposed action is a new alternative recommended for a number of reasons. Manageability would be enhanced by excluding approximately 2,215 acres of private land, not closing 4 miles of roads and 22.25 miles of ways, and by placing the line at a higher elevation on the west and south sides of the area. Vehicles would be unable to enter the remainder of the WSA because of steep terrain.

The roads and ways outside of the new proposed boundary are used extensively by both deer and bird hunters during the fall. These roads and ways are also used by ranchers for livestock management. These activities include hauling horses and placing salt.

Establishing the boundary line at the 6000-foot level would exclude an area of private land and related ongoing mineral activity in the south end of the WSA and all of the western foothills of the western ridge where the majority of the range developments are proposed.

The suitable area is basically the core of the study area. Wilderness designation within this portion of the study area would protect and maintain the area's wilderness values and special features within an area which is capable of being managed to preserve these qualities. These wilderness qualities include a basically natural appearance, outstanding opportunities for solitude, and a variety of primitive types of recreation. This portion of the WSA has special wilderness features which include high mountain ridges and meadows, habitat for a resident population of bighorn sheep, interesting geologic features, scenic values, and a number of plant species of special interest.

Portions of the study area are recommended as nonsuitable for wilderness under the proposed action to resolve conflicts with other resource uses, including development of new range improvements for livestock grazing and the potential for mineral development. The proposed action would recommend the eastern side of the WSA nonsuitable because of mineral potential. This portion of the WSA has high potential for metals in several areas. The proposed livestock range improvements occur along the study area's western boundary and include crested wheatgrass seedings and reservoirs. These developments would provide additional livestock forage and allow for the redistribution of livestock use to offset an existing shortage of available forage.

6. Summary and Analysis of Public Comments

Following is a summary of public comments specific to the WSA concerning adequacy of the analysis in this appendix and responses to those comments. These comments were received both in writing and as oral testimony at public hearings during the comment periods for the 1985 Draft EIS and the 1987 Supplement to the Draft EIS. Comments concerning the BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning statewide issues and analyses are addressed in the Statewide volume.

Comment: Map shows Denio Creek in WSA, text says it is not. Map is correct. **Response:** See Section 1, Introduction - General Description of Study Area. The middle portion of the Creek is outside the WSA, while the headwaters and a section near the mouth are within the WSA.

Comment: Inadequate livestock grazing analysis - Doesn't consider need for plan of improvement. **Response:** See Livestock Management Actions in Section 2, Description of the Alternatives. Range improvements recommended in the planning process are projected under the alternatives where they would be allowed. In addition, livestock use adjustments are projected in combination with the range improvements to offset the existing shortage of available forage (See Livestock Grazing under Section 2, Affected Environment).

Comment: Inadequate recreation use analysis. Available water in Pueblos makes area special; also a national trail. **Response:** See Recreation Use in Section 3, Affected Environment and analysis under Impacts on Primitive and Unconfined Recreation and Impacts on Recreation in Section 4, Environmental Consequences. Visitor use data have been incorporated in the analysis of recreation by type when available. The Desert Trail is also discussed.

Comment: Inadequate energy/mineral data - Magnesium has been staked. **Response:** Magnesium was not identified in the EIS as a mineral commodity with potential for occurrence in this WSA. The U.S. Bureau of Mines mineral survey reports which are referred to in Section 3, Affected Environment, show no potential for magnesium in the WSA.

Comment: Inadequate wildlife/vegetation data - Alvord chub noted on page 53, Volume 1, but not in appendix. **Response:** The Alvord chub is now identified under Wildlife and Special Features in Section 3, Affected Environment, and Section 4, Environmental Consequences.

Comment: Pueblo Mountains contain a recently discovered species of butterfly - Neominois ridingsii (Riding's satyr) which occurs on the grassy west slopes of the Pueblos. **Response:** See Wildlife, Section 3, Affected Environment for documentation of reported sighting of newly discovered species of butterfly. This is not a recently discovered species, but was recently reported on the Pueblo Mountains.

Comment: EIS fails to mention existing water rights - constructed channel between Cottonwood Creek and Willow Creek Access to this channel is needed to maintain it. **Response:** See Livestock Management Actions in Section 2 and Impacts on Livestock Grazing, Section 4. Mechanized heavy equipment would be used on the average of once every 5 years to maintain ditches.

Table 1. Summary of Projected Management Under Each Alternative, Pueblo Mountains WSA (OR-2-81)

Proposed Management	All Wilderness	Enhanced	Partial Wilderness	Proposed Action	No Wilderness/ No Action
Acres Designated as Wilderness [1]	72,690	73,890	41,315	26,150	0
Acres Closed to ORVS by Wilderness Designation	72,690	73,890	41,315	26,150	0
Miles of Roads Closed	0	35.5	10	0.75	0
Miles of Roads Constructed	0	0	2	2	4
Miles of Ways Closed	33	33	24	10.75	0
Acres of Full Fee Estate Acquired [2]	0	3,910	1,930	0	0
Acres of Mineral Estate Acquired [3]	0	3,875	2,440	1,740	0
Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation	69,310	70,015	38,875	24,410	0
Number of Mine Sites Developed	0	0	2	2	3
Miles of Powerline Constructed	0	0	4	4	6
Structural Wildlife Projects Developed: Stream Channel Projects (number) [4]	0	0	1	1	2
Structural Livestock Projects Developed:					
Reservoirs & Waterholes (number)	0	0	0	3	3
Springs (number) [5]	0	0	1	1	1
Pipelines (miles) [6]	0	0	5	5	5
Fences (miles)	0	0	26	26	34
Vegetative Manipulation for Livestock: Brush Control with Seeding (acres)	0	0	3,140	3,140	3,140
Decreased Forage Allocation for Livestock (AUMs)	795	795	170	0	0

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[1] Suitable acres include Nevada's Pueblo Mountains WSA (NV-020-642) totaling 600 acres under the all wilderness, enhanced wilderness, and partial alternatives.
[2] Upon acquisition, these additional lands would be incorporated into the wilderness area, closed to vehicle use, and withdrawn from mineral location and leasing.
[3] Upon acquisition of mineral estate, these lands would be withdrawn from mineral location and leasing.
[4] One project each on two streams with ten stream structures proposed per stream.
[5] Includes a spring development proposed on adjacent BLM lands incorporated into the suitable recommendation under the enhanced wilderness alternative.
[6] The proposed projects are associated with the seeding and would not be proposed without the seeding.

Table 2. Summary of Environmental Consequences of Alternatives, Pueblo Mountains WSA (OR-2-81)

Resource or Activity	All Wilderness	Enhanced Wilderness	Partial	Proposed Action	No Wilderness/No Action
Wilderness Values	Wilderness designation of the entire 72,690 acres within the Pueblo Mountain WSA would result in the protection of existing wilderness values and probable enhancement of those values.	Wilderness designation of 77,800 acres (assuming acquisition of 3,910 acres or private property) would protect and enhance existing wilderness values. The acquisition of 3,875 acres of mineral estate of split-estate lands would further enhance the total area by preserving wilderness values on all lands within the wilderness boundaries.	Wilderness designation of 43,245 acres, including 1,930 acres of acquired private land, would protect existing wilderness values with probable enhancement of those values. Within the 31,375 acres not designated wilderness, projected activities would impair wilderness values directly and indirectly over approximately 29,000 acres with further declines from other potential uses over the long term.	Wilderness designation of 26,150 acres would protect existing wilderness values with probable enhancement of those values. Within the 46,540 acres not designated wilderness, projected activities would impair wilderness directly and indirectly over approximately 30,000 acres with further declines from other potential uses over the long term.	In the absence of wilderness designation, projected activities and continued uses would both directly and indirectly impair wilderness values over approximately 32,000 acres with further declines from other potential uses over the long term.
Energy and Mineral Development	No impact to energy development is expected, since none is projected. Production of mercury, gold and silver from three projected mines would be foregone.	No impact to energy development is expected. Production of mercury, gold and silver from three projected mines would be foregone.	No impact to energy development is expected. Production of silver and gold from one projected mine would be foregone in the suitable area. Production of silver, mercury and gold from two projected mines would occur in the nonsuitable area.	No impact to energy development is expected. Wilderness designation would result in foregone production from one projected silver and gold mine. Production of silver, mercury and gold from two projected mines would occur in the non-suitable area.	No impact on energy development is expected. Production of gold, silver and mercury from three projected mines would occur.
Vegetation	The 33 miles of closed ways would revegetate within 2 to 3 years. There would be little or no change in the vegetation over the remainder of the WSA.	The 68.5 miles of closed vehicle routes would revegetate within two to five growing seasons. There would be little or no change over the remainder of the WSA.	Vegetation would be altered on 3,140 acres while vegetation would be removed on approximately 250 acres. Thirty-four miles of vehicle routes would revegetate. The riparian and meadow vegetation in both the suitable and nonsuitable areas would improve and the ecological status would change from early seral to mid-seral in some areas and from mid-seral to late seral in others.	Vegetation would be altered on 3,140 acres while vegetation would be removed on approximately 250 acres. Disturbance created by range and wildlife developments would revegetate as well as 11.5 miles of roads and ways closed to vehicle use. The riparian and meadow vegetation in both the suitable and nonsuitable areas would improve and the ecological status would change from early seral to mid-seral in some areas and from mid-seral to late seral in others.	Vegetation would be altered on 3,140 acres and vegetation would be removed on approximately 300 acres. Disturbance created by other range and wildlife projects along with mineral exploration would eventually revegetate. The riparian and meadow vegetation would improve and the ecological status would change from early to mid-seral in some areas and from mid-seral to late seral in others.
Wildlife	Wildlife habitat and populations would be maintained on 72,690 acres designated wilderness. Disturbance to wildlife would be greatly reduced by the closure of ways. The reintroduction of Whitehorse cutthroat trout into upper Denio Creek and Van Horn Creek would not occur as a result of precluding the construction of instream structures. Bighorn sheep would be reintroduced in the Van Horn Creek area.	Wildlife habitat and populations would be maintained on 77,800 acres designated wilderness and disturbance to wildlife would be greatly reduced. The reintroduction of Whitehorse cutthroat trout into upper Denio Creek and Van Horn Creek would not occur but bighorn sheep would be reintroduced in the Van Horn Creek area with a corresponding increase in population.	Wildlife habitat and populations would be maintained on 43,245 acres designated wilderness. The reintroduction of Whitehorse cutthroat trout into upper Denio Creek and Van Horn Creek would not occur but bighorn sheep would be reintroduced in the Van Horn Creek area. Riparian habitat, fish habitat and sage grouse habitat would improve. Habitat for 50 antelope would also improve, but a reduction in 80 wintering deer and damage to 3,140 acres of nongame species	Wildlife habitat and populations would be maintained on 26,150 acres designated wilderness. Whitehorse cutthroat trout would be reintroduced into upper Denio Creek, but not in upper Van Horn Creek. The construction of instream structures in upper Denio Creek would occur, but would be precluded in upper Van Horn Creek. Bighorn sheep would be reintroduced in the Van Horn Creek area. Riparian habitat, fish habitat and sage grouse habitat would improve. Habitat for 50 antelope would also im-	Most wildlife habitat species populations could be maintained at present levels over most of the WSA. The proposed reintroduction of Whitehorse cutthroat trout in upper Denio Creek and Van Horn Creek and bighorn sheep in the Van Horn Creek area would occur. Cutthroat trout habitat would be improved in Van Horn Creek and Denio Creek. Riparian habitat, fish habitat and sage grouse habitat would improve. Habitat for 50 antelope would also improve, but a reduction

Table 2. Summary of Environmental Consequences of Alternatives, Pueblo Mountains WSA (OR-2-81)

Resource or Activity	All Wilderness	Enhanced Wilderness	Partial	Proposed Action	No Wilderness/No Action
			habitat is projected.	prove, but a reduction in 80 wintering deer and damage to 3,140 acres of nongame species habitat is projected.	in 150 summering deer, 120 wintering deer, 10 bighorn sheep and damage to 3,140 acres of nongame species habitat is projected.
Watershed	With the exception of Denio Creek, poor water quality and active erosion would continue on the perennial streams and meadows.	All of the perennial drainages and meadows with the exception of those in the Denio Creek watershed, would continue to exhibit active erosion and poor water quality.	Water quality would improve on all streams except for 7 miles affected by mining activity. Streambanks would begin to stabilize on about 20 miles of perennial stream. The remainder of the WSA would show little change.	Most of the perennial drainages and most of the meadows in the suitable portion of the WSA would begin to stabilize under improved livestock management. Water quality on 7 miles of two perennial streams would be reduced due to projected open-pit mining activity.	Headcuts in perennial streams and meadows would begin to heal and fecal coliform counts would drop on 57 miles. Projected mining activity would reduce water quality on 13 miles of three perennial streams.
Livestock Grazing	Baseline livestock grazing use would be reduced by 795 AUMs. Vehicle use for routine livestock management and fence maintenance on 33 miles of ways would be precluded, with some inconvenience and additional expense to livestock operators.	Baseline livestock grazing use would be reduced by 795 AUMs. Vehicle use for routine livestock management and fence maintenance on 33 miles of ways and 35.5 miles of roads would be precluded, causing some inconvenience and additional cost to livestock operators.	Baseline livestock use would be reduced by an estimated 170 AUMs. Vehicle use for routine livestock management would be precluded on 24 miles of ways and 5 miles of dead-end roads with some inconvenience and additional expense to livestock operators. Development of range projects in the nonsuitable area would prevent further livestock use reductions of approximately 625 AUMs.	Livestock use would remain at the baseline level of 4,430 AUMs as a result of constructed projects. Vehicle use for routine livestock management would be precluded on 10.75 miles of ways and 0.75 miles of road, causing some inconvenience and additional expense to livestock operators.	Livestock use would remain at the baseline level of 4,430 AUMs due to constructed projects. Vehicle use for routine livestock management would continue on 33 miles of ways and 17 miles of dead-end roads.
Recreation Use	Wilderness designation would result in a net reduction in the area's overall recreation use level from 700 visitor days per year to less than 500 visitor days per year.	Wilderness designation would result in a net reduction in the area's overall recreation use level from 700 visitor days per year to approximately 400 visitor days per year.	This alternative would result in a net reduction of the overall recreation use level, from 700 visitor days per year to approximately 500 visitor days per year.	This alternative would result in a net reduction of the area's overall recreation use level, from 700 visitor days per year to approximately 500 visitor days per year.	The area's recreation use level of 700 visitor days per year, would not be substantially affected. Primitive recreation would decline moderately as a result of the projected increase in vehicle-oriented recreation and projected mineral and livestock development.
Local Personal Income	Annual local personal income would decrease by approximately $12,000.	Annual local personal income would decrease by approximately $13,000.	Annual local personal income would decrease by approximately $4,500.	Annual local personal income would decrease by approximately $2,500.	Annual local personal income would increase by an unknown amount above the current level of approximately $61,500.

Table 3. Classification of Energy and Mineral Potential, Pueblo Mountains WSA (OR-2-81)

Commodity	Area	Level of Potential	Level of Certainty
Metals (cooper, mercury gold, silver, molybdenum)	See Map 6	H	D
	Rest of WSA	L	C
Geothermal	See Map 6	M	B
	Rest of WSA	O	C
Zinc/Uranium	Part of Area See Map 6	H	B
Thorium	Entire WSA	L	B
Coal	Entire WSA	L	D
Oil/Gas	Entire WSA	O	B
Tar Sands/Oil Shale	Entire WSA	L	D
Limestone	Entire WSA	L	C
Bentonite	Entire WSA	L	B
Diatomite	Entire WSA	L	B
Zeoloites	Part of area (not shown on map)	L	B
	Rest of WSA	O	C
Sodium	Entire WSA	L	A

Legend:

Level of Potential

O - No indication for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Moderate potential for accumulations of energy/mineral resource
H - High potential for accumulations of energy/mineral resource

Level of Certainty

A - Insufficient data or no direct evidence
B - Indirect evidence available
C - Direct evidence but quantitatively minimal
D - Abundant direct and indirect evidence

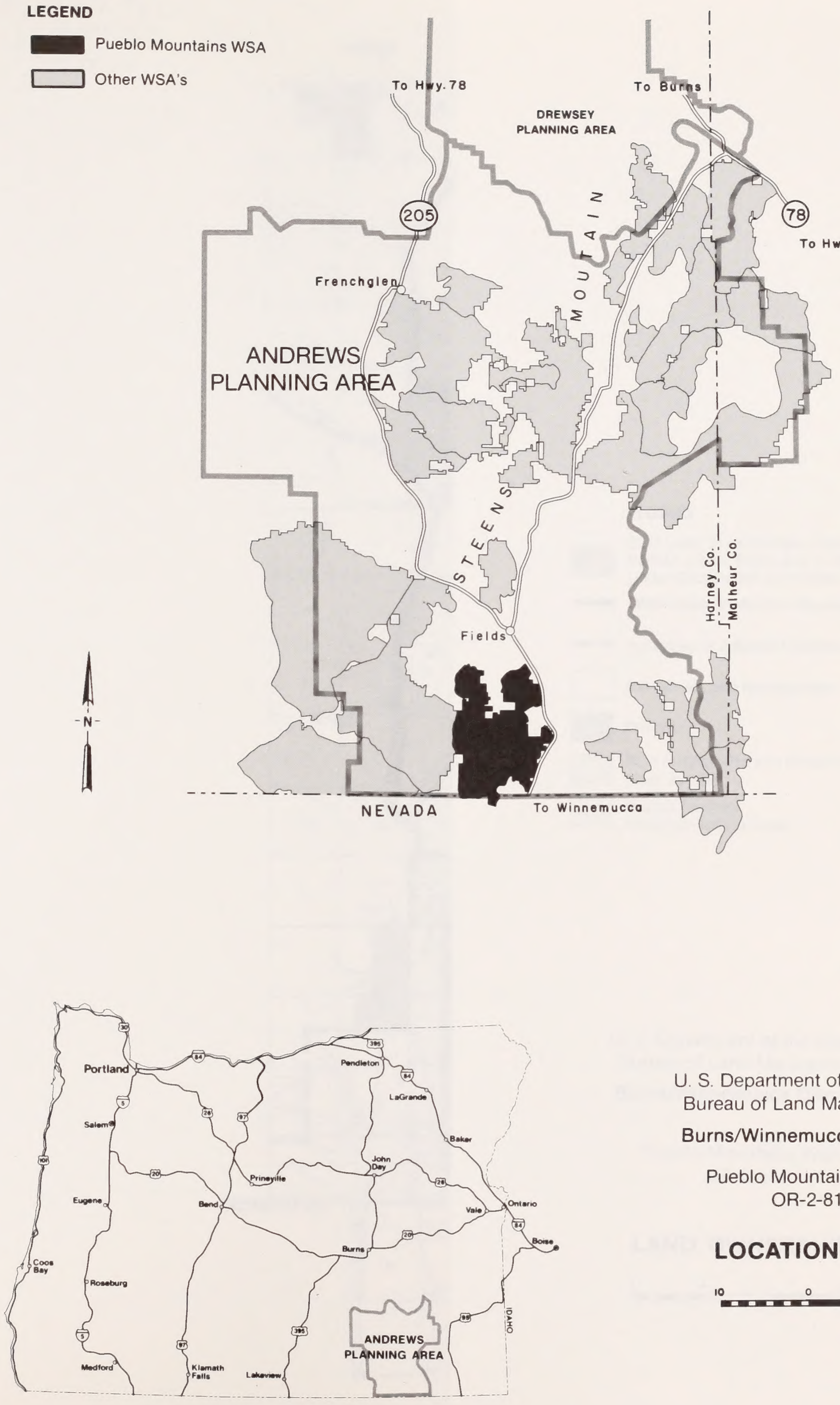
Table 4. Existing and Potential Livestock Use, Pueblo Mountains WSA (OR-2-81)

Grazing Allotment	Licensed AUMs in Allot.	Period of Use	Percent of Allot. in WSA	Projected Baseline Use in WSA (AUMs)[1]
Pueblo-Lone Mtn. (No. 6020)	20,453	04/16-02/28	23	4,225
Denio Basin (No. 6021)	323	06/01-10/31	50	205
Totals	20,776			4,430

[1] Based on preliminary studies, a reduction in current estimated livestock use in the WSA is projected as a result of an apparent shortage of forage. Actual reductions will depend on the results of monitoring. For purposes of analysis, the baseline level of use estimated to be occurring in the WSA at the time of Congressional action is shown as approximately 1,055 AUMs less than current use estimates.

Table 5. Effects of Alternatives on Local Personal Income, Pueblo Mountains WSA (OR-2-81) (NV-020-642) (1981 price levels)

Item	Unit of Measure	All Wilderness	Enhanced Wilderness	Partial	Proposed Action	No Wilderness/ No Action
CHANGES IN RESOURCE OUTPUTS						
Livestock Grazing	AUMs	-795	-795	-170	No Change	No Change
Energy and Mineral Development:						
Metallic Mines	Number	No Change	No Change	+2	+2	+3
Recreation Use	RVD	-200	-300	-200	-200	No Change
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES						
Livestock Grazing	$	-9,540	-9,540	-2,040	0	0
Energy and Mineral Development:						
Metallic Mines	$	0	0	Unknown	Unknown	Unknown
Recreation Use	$	-2,400	-3,600	-2,400	-2,400	0
Total	$	-11,940	-13,140	-4,440	-2,400	0



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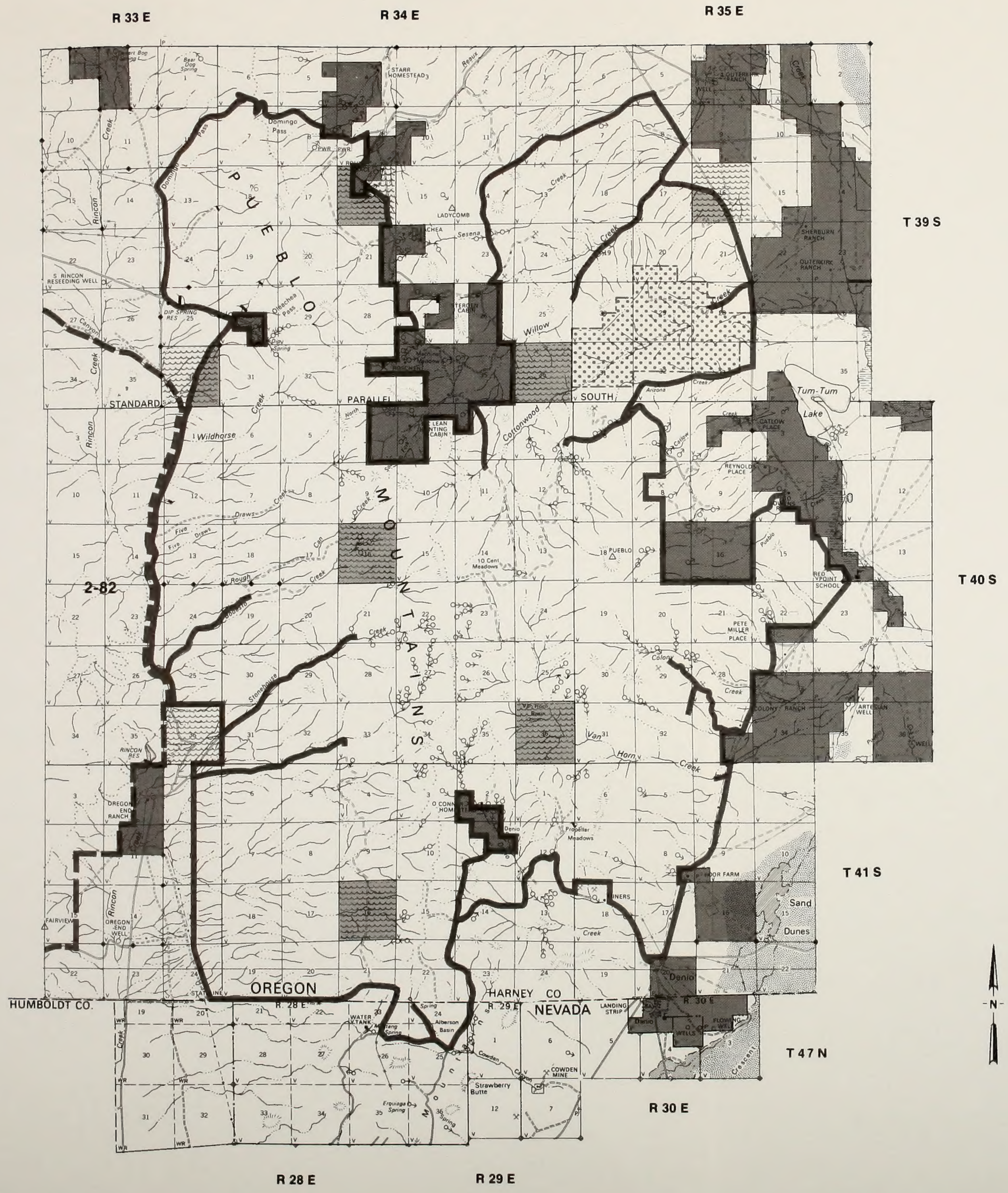
Burns/Winnemucca Districts

Pueblo Mountains WSA
OR-2-81

LOCATION MAP

MAP 1



LEGEND

- ▨ BLM Land Studied Under Section 202 of FLPMA (Other BLM Land in WSA Studied Under Section 603 of FLPMA)
- ━ Wilderness Study Area Boundary
- ╍ Boundary of Adjacent Wilderness Study Areas
- ☐ Bureau of Land Management
- ■ Private
- ▤ BLM Surface-State or Private Subsurface (Split Estate)
- ⁘ Pueblo Foothills Research Natural Area

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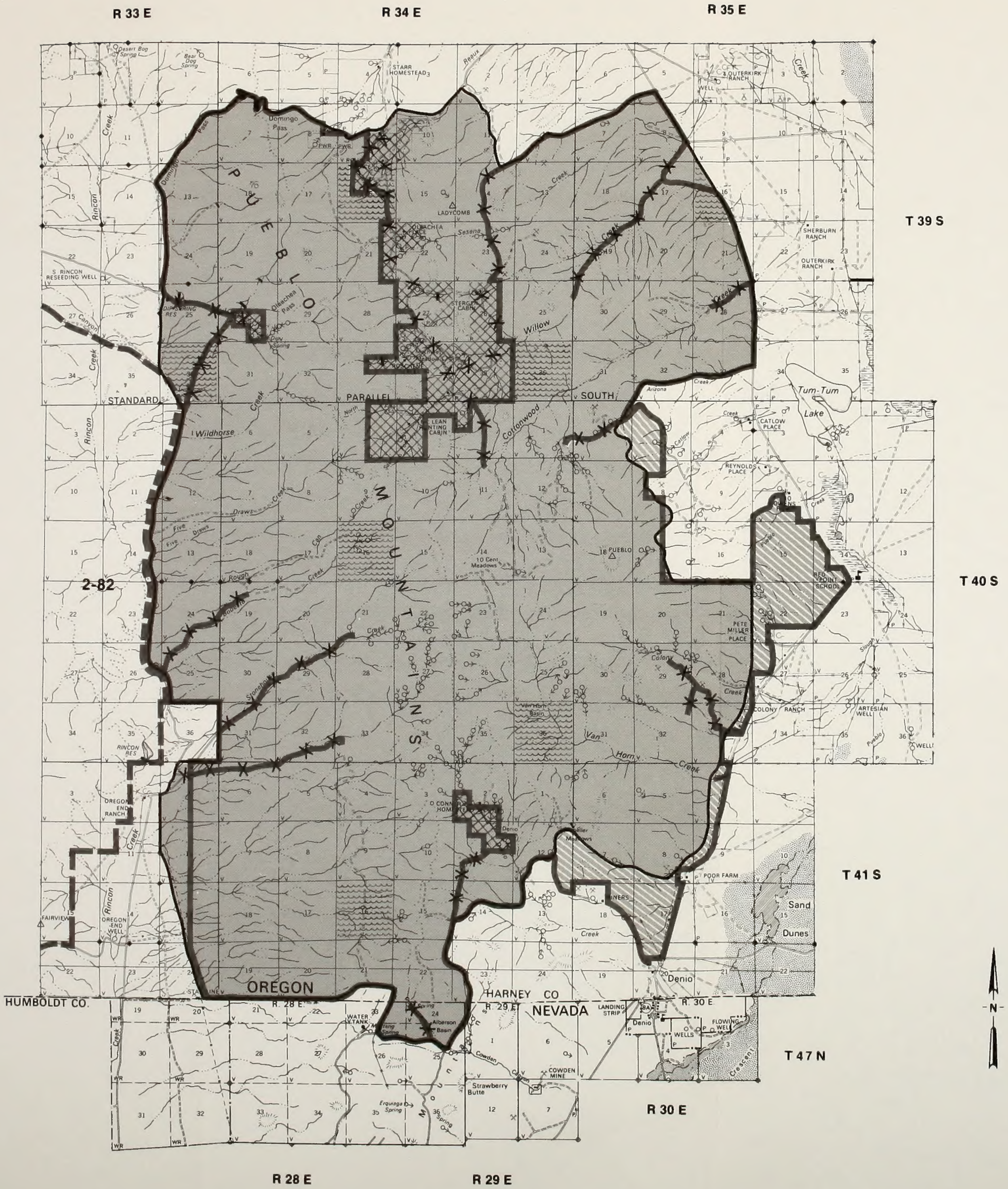
Pueblo Mountains WSA
OR-2-81

LAND OWNERSHIP

1 0 1 2 MILES

MAP 2



— Wilderness Study Area Boundary

– – Boundary of Adjacent Wilderness Study Areas

▢ Recommended Suitable for Wilderness

▨ Recommended Non-suitable for Wilderness

▩ Non-Federal Land within Recommended Wilderness

▤ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness

✕—✕ Recommended Road Closure

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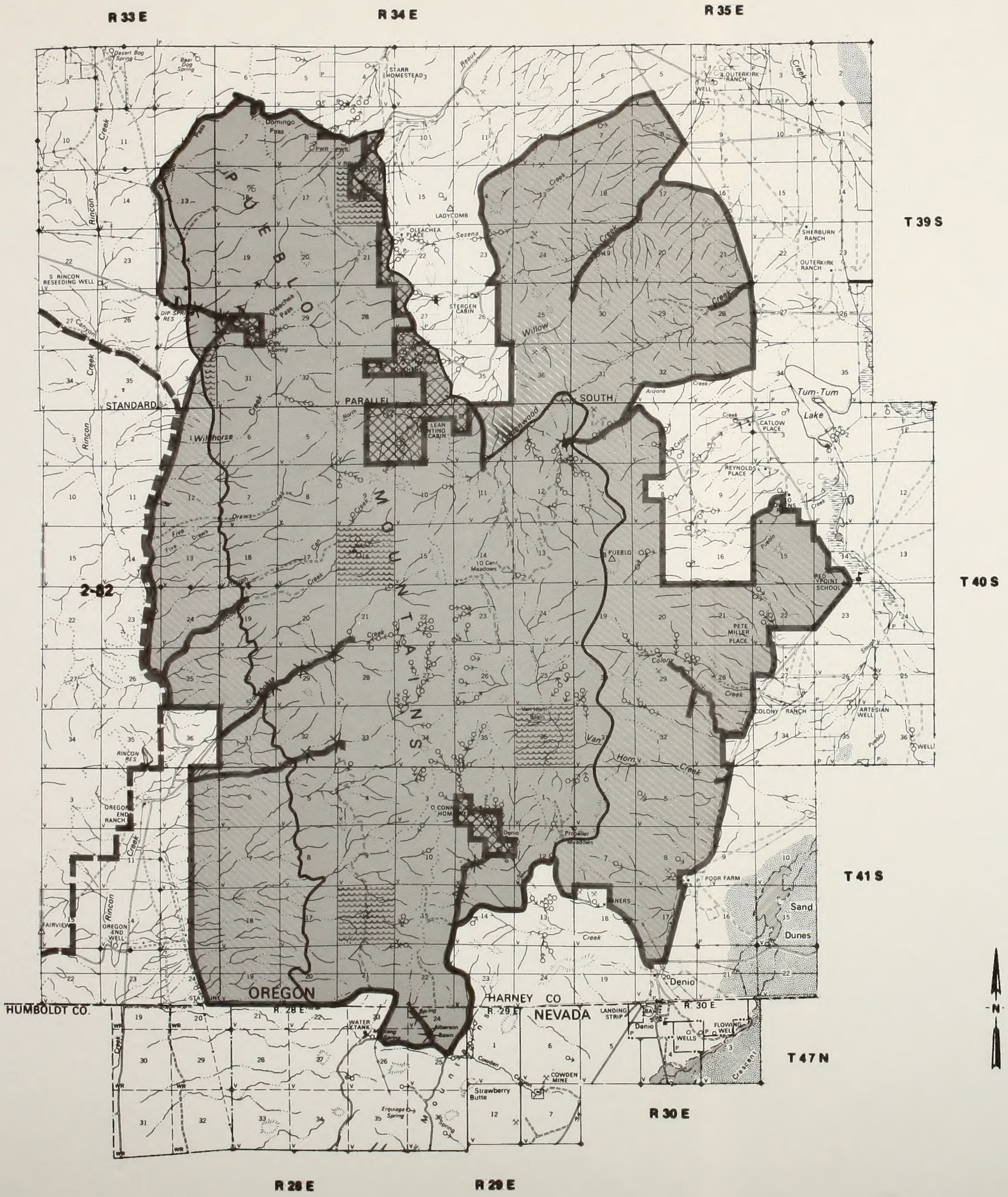
Pueblo Mountains WSA
OR-2-81

ENHANCED ALTERNATIVE

1 0 1 2 MILES

MAP 3



▬ Wilderness Study Area Boundary

▬ ▬ Boundary of Adjacent Wilderness Study Areas

☐ Recommended Suitable for Wilderness

▨ Recommended Non-suitable for Wilderness

▩ Non-Federal Land within Recommended Wilderness

▤ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness

✕ ✕ Recommended Road Closure

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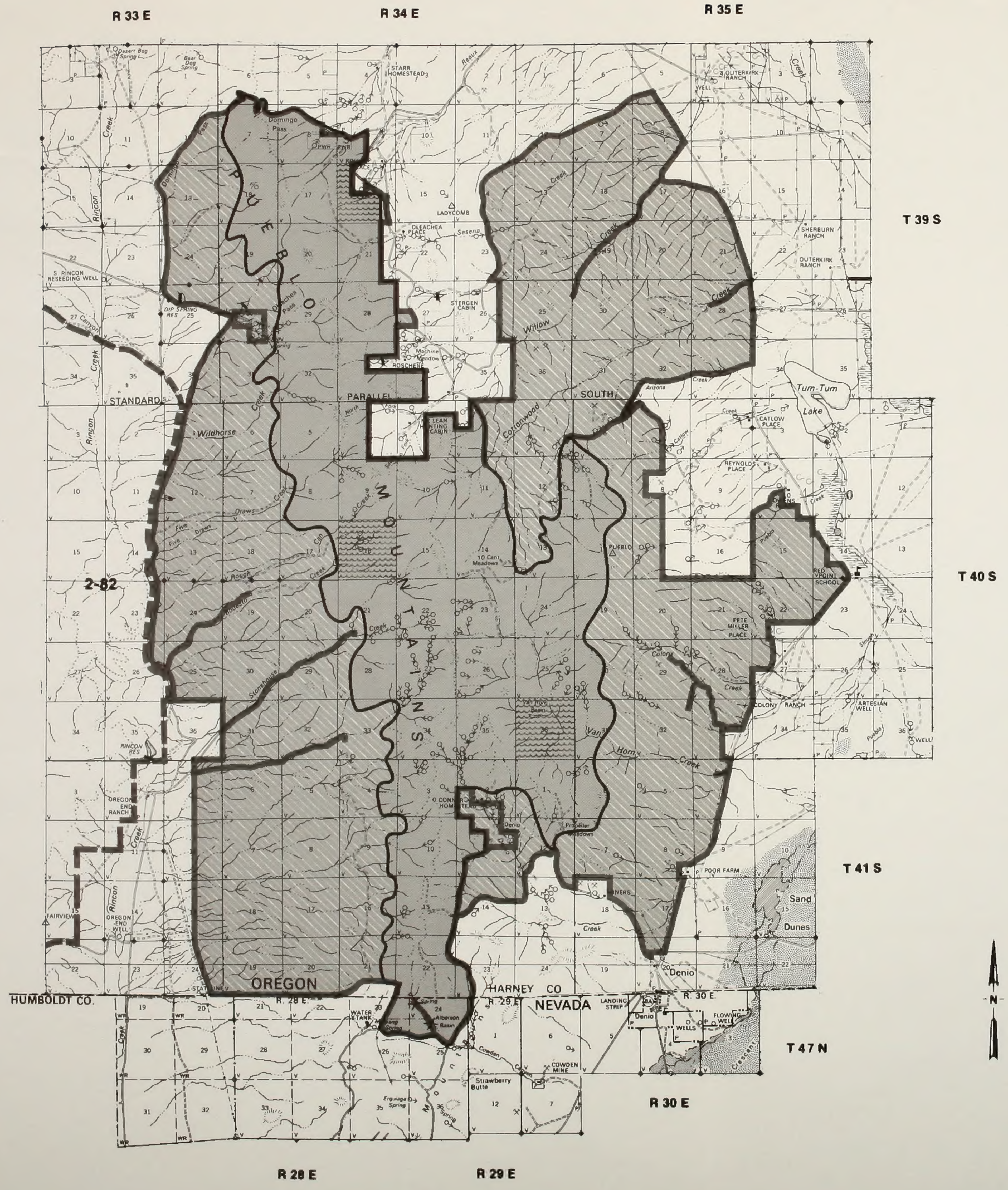
PARTIAL ALTERNATIVE

1 0 1 2 MILES

MAP 4



▬ Wilderness Study Area Boundary

▬ ▬ Boundary of Adjacent Wilderness Study Areas

☐ Recommended Suitable for Wilderness

▨ Recommended Non-suitable for Wilderness

▒ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness

-×-×- Recommended Road Closure

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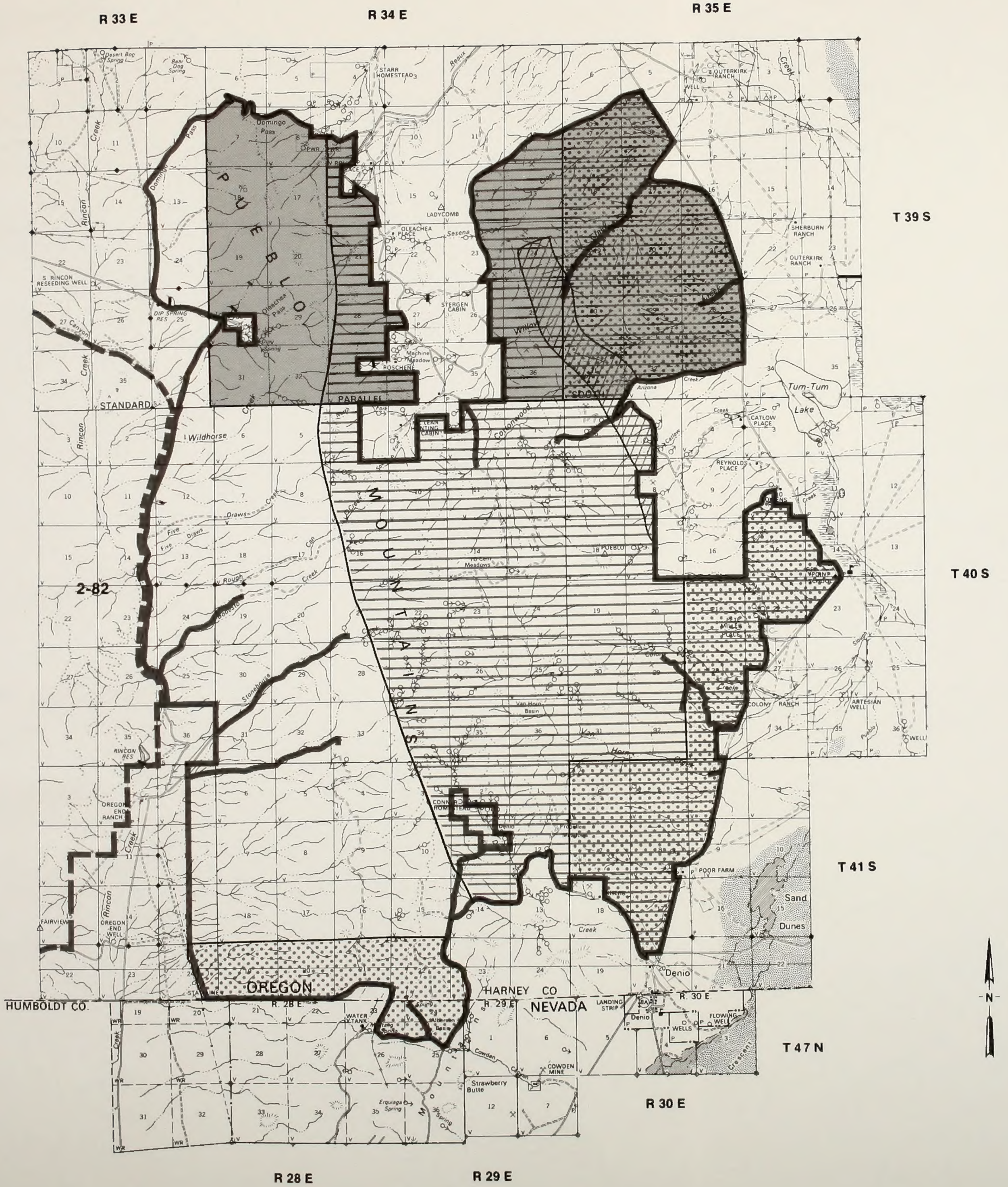
Pueblo Mountains WSA
OR-2-81

PROPOSED ACTION

1 0 1 2 MILES

MAP 5



▨ High Potential
(HB) for Zinc and Uranium

▒ Moderate Potential
(MC) for Geothermal Resources

☰ High Potential
(HD) for Copper, Mercury, Gold, Silver and Molybdenum

■ Portion of WSA within Nominated Area of Critical Mineral Potential

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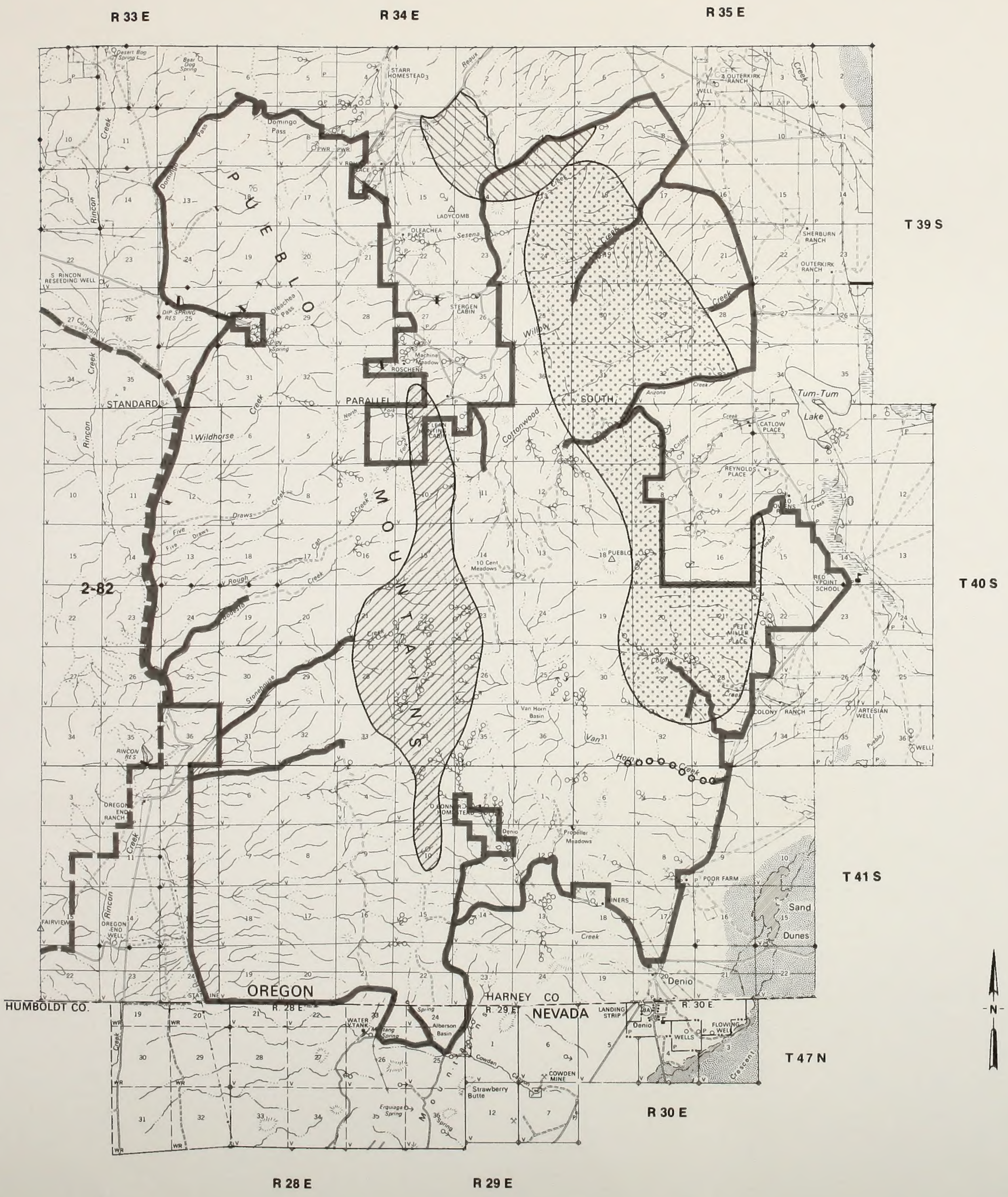
Pueblo Mountains WSA
OR-2-81

MODERATE OR HIGH POTENTIAL
MINERAL OR ENERGY RESOURCES

1 0 1 2 MILES

MAP 6



▨ California Bighorn Sheep

▧ Antelope Winter Range

░ Deer Winter Range

o o o Whitehorse Cutthroat Trout

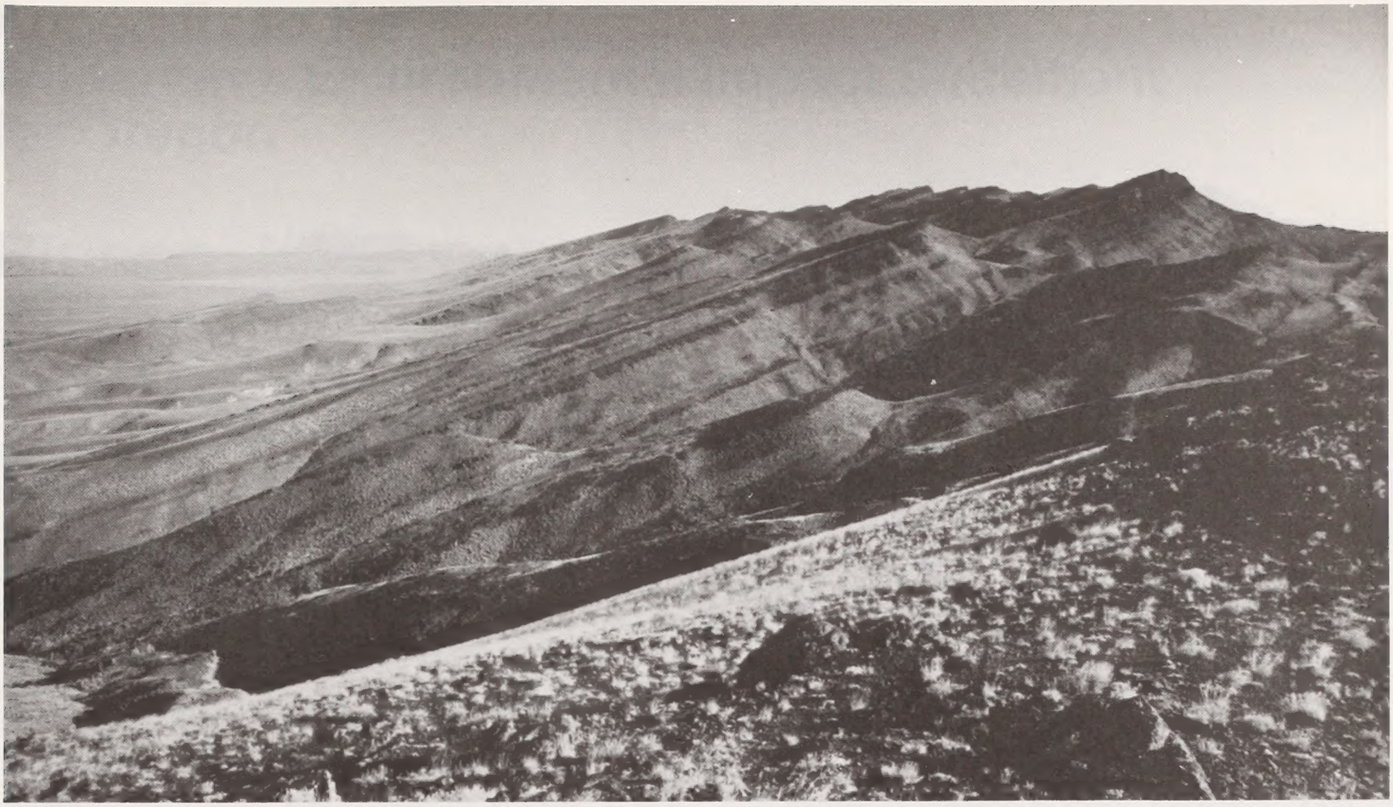
U. S. Department of the Interior
Bureau of Land Management
Burns/Winnemucca Districts

Pueblo Mountains WSA
OR-2-81

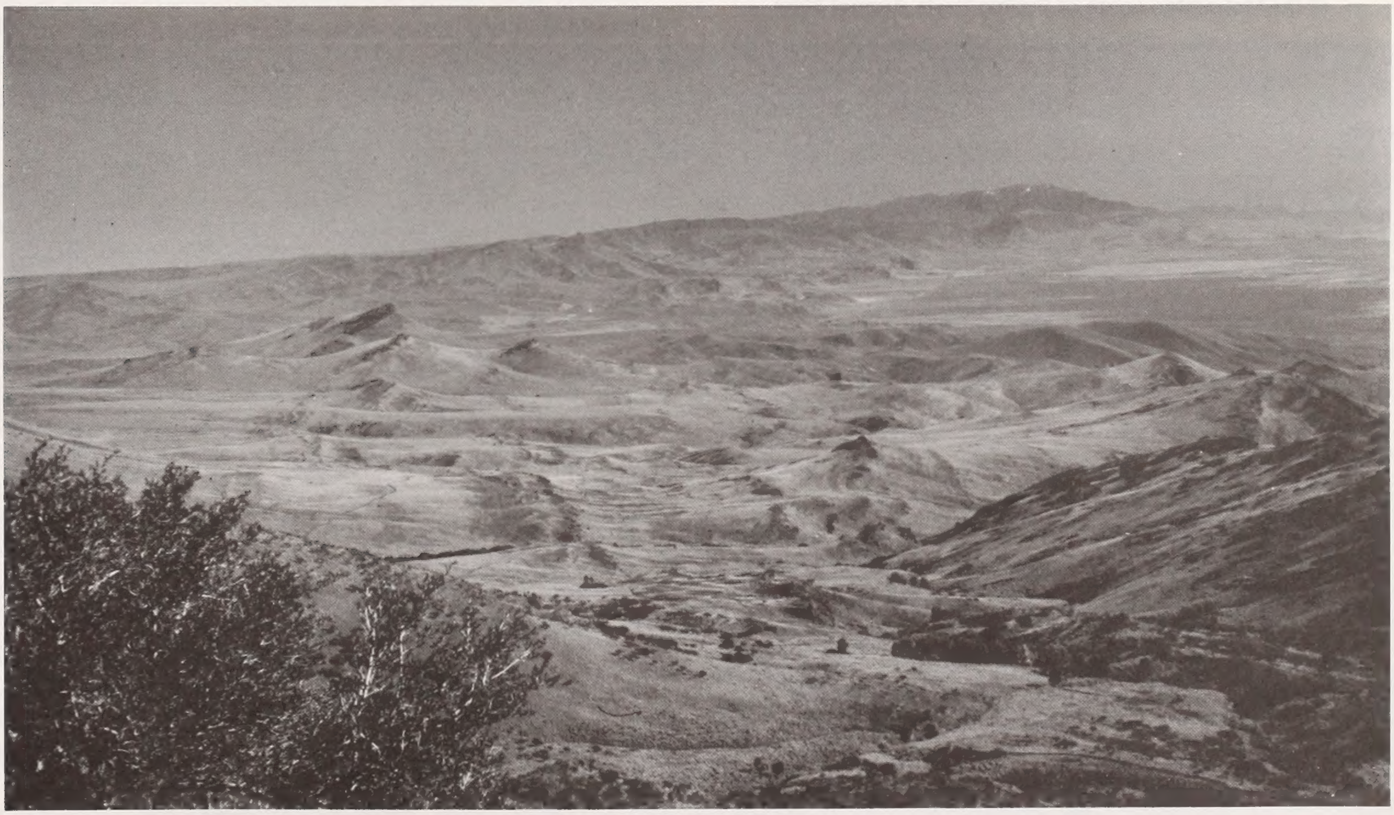
SPECIAL FEATURES

1 0 1 2 MILES

MAP 7



Pueblo Mountains WSA, OR-2-81. The southern end of the study area looking north at the western slope of the western ridgeline, within the area recommended suitable under the enhanced alternative. The upper slopes of this ridgeline are suitable under the proposed action. Although cut by stream drainages this portion of the WSA appears much like a table top tilted to the west at nearly a 45° angle. August 1983



Pueblo Mountains WSA, OR-2-81. The Ten Cent Meadow area looking north at private land surrounded by the WSA. Portions of the fore and midground on the left and right are within the WSA. The middle view area contains considerable private land. Most of the low ridges and hills in the middle of the photo are suitable under the enhanced alternative. The features visible from this location include the Steens Mountain ridgeline (background center), the high Steens (background right of center) and Alvord Lake (light colored area on the right below the Steens). August 1983.

Pueblo Mountains WSA, OR-2-81. Looking to the southeast from the west side of the meadow in the north central portion of the WSA. Most of the visible area is within the area recommended suitable under the enhanced and partial alternatives. The left middle-ground area is recommended nonsuitable under the proposed action. The Ten Cent Meadow area is nearly surrounded by mountain mahogany. The ridgeline in the middle-ground is the eastern ridgeline of the Mountains south of Pueblo Peak. August 1983.

Pueblo Mountains WSA, OR-2-81. Looking to the west from a ridge above Cottonwood Creek in the northern portion of the WSA. All of this area is recommended suitable under the enhanced and partial alternatives and some of the middle-ground area is recommended nonsuitable under the proposed action. The steep eastern face of the western ridgeline, rises high above an interior valley. August 1983.

Appendix to the Wilderness Environmental Impact Statement for Oregon

Rincon Wilderness Study Area (OR-2-82)

1. Introduction

General Description of the Study Area

The Rincon Wilderness Study Area (WSA) is located 95 miles south of Burns, 10 miles west of Fields and 1 mile north of the Oregon/Nevada border in Harney County (see Map 1). The WSA is 24 miles south of the end of Oregon State Highway 205 and 8 miles north of Nevada State Highway 140.

Most of the WSA is located in the Burns BLM District. A very small portion of the study area, the southwestern corner, lies within the Lakeview BLM District. The shape of the study area includes a panhandle extending to the north from the main portion of the WSA.

The WSA contains 103,965 acres of public land (see Map 2). Within the study area are two parcels of private land totaling 120 acres and 6,420 acres of split-estate land.

The Rincon WSA is 23 miles long (including the panhandle) and 12 miles wide. The area is bounded almost entirely by roads. The northern boundary line is formed by the Long Hollow Road (county-maintained) and private land. The eastern boundary line is composed of several BLM roads, scattered parcels of private land and the Rincon crested-wheatgrass seeding. The southern and southwestern boundary lines are formed by a BLM-maintained road (the Long Draw Road) and a portion of the Hawk Valley crested wheatgrass seeding. The western boundary line is formed by the Funnel Canyon Road (BLM-maintained).

Four dead-end roads, totaling 13.5 miles, enter the study area and form part of the boundary line. All of these roads enter the WSA from the eastern boundary line. Two of the dead-end roads (each 1.5 miles in length) are in the northern portion of the study area. The other two dead-end roads are located in the central portion of the WSA and are 6 miles and 4.5 miles long. The section of road that forms the northern boundary line is a high-standard gravel road. The roads that form the remainder of the boundary lines on the east, west and south, as well as the four dead-end roads that enter the WSA, are all low standard dirt roads.

The Rincon WSA contains a variety of physical features, including portions of Catlow Rim, Lone Mountain and Oregon End Table. On the northwest side of the panhandle, Catlow Rim extends almost 15 miles into the WSA and reaches an elevation of 6,350 feet at Square Mountain in the north end of the WSA.

The part of Catlow Rim located within the WSA has several deep canyons with intermittent streams and is characterized by rugged, westerly-facing rock cliffs. A flat, open valley (part of Catlow Valley) lies between the toe of Catlow Rim and the western boundary road in the northwest portion of the WSA. Along this boundary road is the study area's lowest elevation, 4,450 feet. Within this area along the rim is the study area's greatest elevation difference in a short distance, 1,800-foot drop from the top of Square Mountain to Catlow valley, within a distance of approximately 1 mile.

The southwestern corner of the WSA contains the Lone Mountain area which extends 6 miles to the east from the western boundary. Lone Mountain and the surrounding hills are characterized by rock pinnacles and columns of volcanic origin. The summit of Lone Mountain near the southwestern boundary is the highest point in the study area, reaching an elevation of 6,903 feet. The average elevation of the study area is approximately 5,500 feet.

A large, generally flat valley lies between Lone Mountain and Oregon End Table to the southeast. Oregon End Table is a large, flat-topped plateau, and is 3 miles by 5 miles in size. This area is extremely rocky and is characterized by rimrock around the table's edge.

The vegetation in the WSA is relatively uniform. Big sagebrush and low sagebrush are the dominant species, with big sagebrush being more widespread.

Interrelationships

Three other WSAs are adjacent to the Rincon WSA. On the southeastern side of the study area lies the Pueblo Mountains WSA (OR-2-81); along the south is Hawk Mountain WSA (OR-1-146); and on the west is the Basque Hills WSA (OR-2-84). Each of these areas is separated from the Rincon WSA by a road which is maintained by BLM and private landowners on an as-needed basis.

The Pueblo-Lone Mountain grazing allotment includes portions of all four WSAs. Proposals to construct range improvements in the Rincon WSA are related to grazing management in the other three WSAs. Portions of two other grazing allotments are also located within the Rincon WSA; South Steens and Beatys Butte.

The 440-acre Long Draw Research Natural Area (RNA) is located in both Hawk Mountain WSA and Rincon WSA. About 20 acres of the RNA are within the Rincon WSA because the RNA boundary is drawn along legal subdivisions. The RNA was designated to protect an excellent stand of Indian ricegrass and needle-and-thread grass, but neither of these vegetative communities is found within the Rincon WSA. Proposed management of the RNA includes fencing the vegetative features, but the enclosure would not extend into the Rincon WSA. Management restrictions for the portion of the RNA within the WSA would continue to apply whether or not the area was designated wilderness.

The WSA is located within ODFW's Beatys Butte Wildlife Management Unit, which contains 2,507 square-miles of land. The WSA supports a summer population of an estimated 200 antelope, 300 deer and 20 California bighorn sheep and a winter population of 100 antelope and 400 deer. ODFW has not set management objectives for antelope, but has an objective of 3,000 deer for the Beatys Butte Wildlife Management Unit. The South Catlow Rim bighorn sheep herd is one of 13 bighorn herds in Oregon. ODFW has an objective of 100 California bighorn sheep for the South Catlow Rim area. The proposed increase in bighorn sheep from 20 to 100 is through a natural population increase. ODFW has proposed the reintroduction of bighorns into the Lone Mountain area in the southern part of the WSA. The objective for bighorns on Lone Mountain is to establish a population of 75. Most of the increase would be through a natural population increase after the release. This site is one of five identified in the BLM's Burns District as a potential transplant site and ranks as a Priority 1 (first choice release site) by ODFW for the State.

The management objectives for this area, which provide for protection and enhancement of bighorn habitat, were developed in conjunction with ODFW as reflected in the Burns District Bighorn Habitat Management Plan and the Andrews Land Use Plan. The objective for nongame wildlife is to maintain populations of naturally occurring species at self-sustaining levels. The proposed action for this WSA conforms with ODFW's management objectives for all wildlife.

ODFW maintains seven wildlife guzzlers and two exclosures in the WSA. ODFW conducts aerial monitoring of wintering deer and antelope and yearlong monitoring of bighorn sheep. The U.S. Department of Agriculture (USDA) conducts a predator control program by aerial shooting of coyotes in the southern part of the WSA near Oregon End Ranch to reduce predation on livestock.

Harney County has not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study and EIS planning, scoping and public review process. These issues concern both the effects of wilderness designation on existing and potential land uses or resources in the WSA, as well as the effects of existing and potential land uses or resources on wilderness values. Land uses or resources raised as issues specifically for this WSA include:

- impact on the area's wilderness values;
- impact on energy and mineral development;
- impact on the WSA's habitat for bighorn sheep, antelope, raptors and sage grouse;
- impact on recreation use levels;
- impact on existing motor vehicle access for maintenance of wildlife projects, particularly effects on maintenance costs of eliminating this access under wilderness designation; and
- impact on livestock grazing use levels.

No other issues specific to this WSA were raised by BLM or the public.

2. Description of the Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made.

The following alternatives are analyzed:

- all wilderness
- enhanced wilderness
- proposed action
- no wilderness/no action

Closing the boundary roads and combining the Rincon area with one or more of the adjacent study areas is not analyzed in the enhanced alternative. All of the boundary roads which surround the Rincon WSA provide access for livestock operators, recreationists, BLM personnel and private landowners. These are important access routes to areas where access is minimal; therefore, closing the roads is not feasible.

All Wilderness

The all wilderness alternative would recommend all 103,965 acres of the public land in the Rincon WSA suitable for wilderness (see Map 2). For purposes of analysis, it is assumed that the private lands and the mineral estate of split-estate lands would not be acquired. The four dead-end roads that enter the study area would remain open.

Energy and Mineral Development Actions

Wilderness designation would close 97,545 acres of public land within the WSA to all forms of appropriation under the mining and mineral leasing laws. A total of 120 acres of private land and 6,420 acres of split-estate land would remain open to mineral entry. There are no energy resources with moderate or high potential for occurrence in the WSA.

Indirect evidence indicates a moderate potential for occurrence of copper, mercury, gold and diatomite within the WSA. There are no known developable deposits of these commodities and no mining claims within the WSA. Due to the thick basalt layer covering the area, exploration for copper, gold and mercury would generally be restricted to limited surface protrusions of suitable geologic structures. Surface evidence of suitable sedimentary formations appropriate for the occurrence of diatomite are also limited. There is a producing diatomite mine with ample reserves in the region. Therefore, it is projected that only casual exploration for copper, mercury, gold and diatomite would occur.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Two guzzlers would be constructed to improve wildlife habitat, primarily that of deer, antelope, California bighorn sheep and sage grouse that has been substantially altered by man's activities (i.e. livestock). The guzzlers are needed to improve habitat so that wildlife, particularly bighorn sheep, can increase to levels closer to what occurred in pristine times. These guzzlers are a low maintenance type that would require infrequent maintenance and would not require motorized equipment for that maintenance.

Reintroduction of bighorn sheep, as proposed by ODFW, into the Lone Mountain area would occur as it would be an attempt to restore a native species that occurred in the area prior to human encroachment.

If major repairs were needed, seven existing guzzlers and two exclosures would be abandoned due to poor access with the closure of roads.

Livestock Management Actions

Based on preliminary studies, a reduction in livestock grazing use of 1,255 AUMs is projected, depending upon the results of monitoring. This reduction would result in a total livestock grazing use of 5,799 AUMs in the WSA.

In the Pueblo-Lone Mountain allotment livestock grazing use would be reduced by 1,255 AUMs, thus the total use would change from 6,450 AUMs to 5,195 AUMs. Grazing use in the South Steens and Beatys Butte allotments would remain unchanged.

The seasons of use and distribution of AUMs for all three allotments are as shown in Table 4.

Vehicle use for livestock management on 52 miles of ways would be precluded. Management of livestock and maintenance of 23 miles of fence would be conductedmainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years for maintenance of the existing 26 reservoirs and 6 springs.

Recreation Management Actions

The entire 103,965 acres, excluding 13.5 miles of dead-end roads, would be closed to motorized vehicle use. This would involve the use on 52 miles of existing ways. Current recreational use is estimated to be less than 300 visitor days per year. Most of the area's recreationists utilize vehicles for access into the area via existing roads and ways.

Enhanced Wilderness

The enhanced wilderness alternative would recommend all 103,965 acres of public land in the WSA suitable for wilderness designation (see Map 3). Also, an attempt would be made to acquire the 120 acres of private land and the mineral estate of 6,420 acres of split-estate land through purchase or exchange with willing owners. Assuming acquisition of private lands, the total area recommended suitable under this alternative would be 104,085 acres.

The 13.5 miles of dead-end roads, as well as 52 miles of ways, which enter the WSA would be closed. Only minor boundary adjustments resulting from the land acquisitions would occur under this alternative.

Energy and Mineral Development Actions

Wilderness designation would close 97,545 acres of public land within the WSA to all forms of appropriation under mining and mineral leasing laws. If acquisition is successful, 6,540 acres of split-estate and private lands would also be closed to mineral entry, for a total of 104,085 acres. Projected exploration for gold, copper, mercury and diatomite would be precluded.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and to be consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Two guzzlers would be constructed to improve wildlife habitat, primarily that of deer, antelope, California bighorn sheep and sage grouse that has been substantially altered by man's activities (i.e. livestock). They are needed to improve habitat so that wildlife, particularly bighorn sheep, can increase to levels closer to what occurred in pristine times. These guzzlers are a low maintenance type that would require infrequent maintenance and would not require motorized equipment for that maintenance.

Reintroduction of bighorn sheep, as proposed by ODFW, into the Lone Mountain area would occur as it would be an attempt to restore a native species that occurred in the area prior to human encroachment.

If major repairs were needed, seven existing guzzlers and two exclosures would be abandoned due to poor access with the closure of roads and ways.

Livestock Management Actions

Based on preliminary studies, a reduction in livestock grazing use of 1,255 AUMs is projected, depending upon the results of monitoring. This reduction would result in a total livestock grazing use of 5,799 AUMs in the WSA.

In the Pueblo-Lone Mountain allotment, livestock grazing use would be reduced by 1,255 AUMs, thus the total use would change from 6,450 AUMs to 5,195 AUMs. Grazing use in South Steens and Beatys Butte allotments would remain unchanged.

The seasons of use and distribution of AUMs for all three allotments are as shown in Table 4.

Vehicle use for livestock management on 52 miles of ways and 13.5 miles of dead-end roads would be precluded. Management of livestock and maintenance of 23 miles of fence would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years for maintenance of the existing 26 reservoirs and 6 spring developments.

Recreation Management Actions

The entire 104,085 acres of public land within the WSA, including 13.5 miles of dead-end roads and 52 miles of ways, would be closed to motorized vehicle use. Current recreational use is estimated to be less than 300 visitor days per year. Most of the area's recreationists utilize vehicles for access into the area via existing roads and ways.

Proposed Action

The proposed action would recommend 19,428 acres of public land within the WSA suitable for wilderness designation (see Map 4). Also, an attempt would be made to acquire the mineral estate of 1,500 acres of split-estate land located within the area recommended suitable. The remaining 84,537 acres of the WSA would be recommended nonsuitable for wilderness designation.

Under this alternative, 19,428 acres, including 4 miles of ways, would be closed. The 13.5 miles of dead-end roads would remain open.

Boundary line adjustments under this alternative would be made along the eastern, southern and northern portions of the WSA. While the northwestern boundary line remains the same (following the Funnel Canyon Road), the northeastern boundary line of the WSA under this alternative would follow legal subdivisions. Approximately 6,320 acres in the northeast corner of the WSA would be recommended nonsuitable for wilderness. This would exclude from the suitable area several reservoirs, ways and two dead-end roads.

The northern boundary line, which currently follows the Long Hollow Road, would be pulled back to the prominent ridge, following the 5,300-foot level, and an additional area of approximately 1,117 acres would be recommended nonsuitable.

The southeastern boundary line of the wilderness area would again follow part of the study area's present boundary line, along a road from Mahogany Point to the south side of the section north of Coyote Hole Reservoir. From this point, the boundary line turns to the west to form the southern boundary line. This portion of the boundary line follows a combination of legal subdivisions, an elevation contour (5,600 feet) and a small drainage which cuts through the southern portion of Catlow Rim and intersects with the Funnel Canyon Road.

The land to the south and east of this boundary line (about 77,100 acres) would be recommended as nonsuitable for wilderness under this alternative. The range developments, roads and ways in this part of the WSA are located just southeast of the suitable portion of the study area northeast of the Lone Mountain area.

Energy and Mineral Development Actions

Wilderness designation would close 17,928 acres of public land within the WSA to all forms of appropriation under mining and mineral leasing laws. If acquisition of the mineral estate is successful, 1,500 acres of split-estate land would also be closed to mineral entry, for a total of 19,428 acres.

There are no energy resources with moderate or high potential for occurrence in the WSA.

Indirect evidence indicates a moderate potential for the occurrence of copper, mercury, gold and diatomite within the WSA. There are no known developable deposits of these commodities and no mining claims within the WSA. Due to the thick basalt layer covering the area, exploration for copper, gold and mercury would generally be restricted to limited surface protrusions of suitable geologic structures. Surface evidence of suitable sedimentary formations appropriate for the occurrence of diatomite are also limited. There is a producing diatomite mine with ample reserves in the region. Therefore, it is projected that only casual exploration for copper, mercury, gold and diatomite would occur regardless of wilderness designation.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and in the suitable portion, consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

In the suitable portion, two guzzlers would be constructed to improve wildlife habitat, primarily that of deer, antelope, California bighorn sheep and sage grouse that has been substantially altered by man's activities (i.e. livestock grazing). They are needed to improve habitat so that wildlife, particularly bighorn sheep, can increase to levels closer to what occurred in pristine times. These guzzlers are a low maintenance type that would require infrequent maintenance and would not require motorized equipment for that maintenance. One existing guzzler would be abandoned if major repairs were needed, due to poor access with the closure of ways.

In the nonsuitable area, reintroduction of bighorn sheep, as proposed by ODFW, into the Lone Mountain area would occur.

Also in the nonsuitable area, a 6,000-acre control burn to improve antelope habitat is projected. Six existing guzzlers and two exclosures around springs would be maintained.

Livestock Management Actions

Livestock grazing use would remain at the current estimated use level of approximately 7,054 AUMs in the portions of the South Steens, Pueblo-Lone Mountain and Beatys Butte allotments located within the WSA. The seasons of use and distribution of AUMs for all three allotments are as shown in Table 4.

Vehicle use for livestock management would be precluded on 4 miles of ways. Management of livestock and maintenance of 4 miles of fence would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years for the existing three reservoirs located within the area recommended suitable.

Under this alternative, a 1,870-acre burn and seeding, 3 reservoirs, 2 springs, 23 miles of pipeline, 22 miles of fence and 1 storage tank would be developed. These projected developments are located within the area recommended nonsuitable for wilderness designation. These developments would improve livestock management, protect spring sources and increase the amount of forage by 1,255 AUMs in the Pueblo-Lone Mountain allotment.

In the area recommended nonsuitable, vehicle use for livestock management and maintenance would continue on 48 miles of ways.

Recreation Management Actions

The entire 19,428 acres, including 4 miles of existing ways, would be closed to motorized vehicle use. Current recreational use is estimated to be less than 300 visitor days per year. Most of this recreational use utilizes motorized vehicles for access into the WSA via existing roads and ways.

No Wilderness/No Action

The no wilderness/no action alternative would recommend the entire 103,965 acres of the WSA nonsuitable as wilderness.

Energy and Mineral Development Actions

All of the 103,965 acres of public land in the WSA would be open to mineral and energy exploration and development.

There are no energy resources with moderate or high potential for occurrence in the WSA.

Indirect evidence indicates a moderate potential for the occurrence of copper, mercury, gold and diatomite within the WSA. There are no known developable deposits of these commodities and no mining claims within the WSA. Due to the thick basalt layer covering the area, exploration for copper, gold and mercury would generally be restricted to limited surface protrusions of suitable geologic structures. Surface evidence of suitable sedimentary formations appropriate for the occurrence of diatomite are also limited. There is a producing diatomite mine with ample reserves in the region. Therefore, it is projected that only casual exploration for copper, mercury, gold and diatomite would occur.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Two guzzlers would be constructed to improve habitat for deer, antelope, bighorn sheep, sage grouse and other wildlife species. These guzzlers are a low maintenance type that would require infrequent maintenance. A 6,000-acre controlled burn to improve antelope habitat is projected. Maintenance of the seven existing wildlife guzzlers and two exclosures around springs would continue by vehicle. Reintroduction of bighorn sheep, as proposed by ODFW, into the Lone Mountain area would occur.

Livestock Management Actions

Livestock grazing would remain at the current estimated use level of approximately 7,054 AUMs in the portions of the South Steens, Pueblo-Lone Mountain and Beatys Butte allotments located within the WSA. The seasons of use and distribution of AUMs for all three allotments are as shown in Table 4.

Projected developments would include 3 reservoirs, 2 spring developments, 25 miles of pipeline, 23 miles of fence, 2 water storage tanks and a 1,870-acre burn-and-seed. These developments would improve livestock management, protect spring source, increase the availability of the existing forage and provide additional forage in the amount of 1,255 AUMs in the Pueblo-Lone Mountain allotment. That forage would be used to forestall a potential reduction of 4,000 AUMs in the Pueblo-Lone Mountain allotment.

Vehicle use for livestock management and maintenance of 23 miles of fence would continue on the existing 52 miles of ways and 13.5 miles of dead-end roads.

Recreation Management Actions

The entire 103,965-acre area would remain open to motorized vehicle use. Vehicle use for recreational pursuits would continue to utilize the existing 52 miles of ways and 13.5 miles of dead-end roads. Current recreation use is estimated to be less than 300 visitor days per year. Vehicles are the primary means to gain access into the WSA for recreational pursuits.

Summary

Table 1 summarizes the projected management actions under each alternative.

Table 2 summarizes the environmental consequences of each alternative.

3. Affected Environment

This section discusses only those activities or resources which influence the character of the study area, or that may be affected by the alternatives.

Wilderness Values

Naturalness

The Rincon WSA appears to be in a relatively natural condition. None of the unnatural developments within the study area are substantially noticeable and most of them can be seen from only a very small portion of the WSA. With the exception of two areas where these developments are somewhat concentrated, a visitor to the study area would not feel that people have made a significant impact on the natural quality of the WSA.

The Rincon WSA contains 75 unnatural features. Of this total, 40 are water developments for livestock or wildlife, including 26 reservoirs, 8 wildlife guzzlers and 6 spring developments. There are 32 vehicle ways, totaling approximately 52 miles. One of the developments is an old mining prospect and the remaining developments are interior fences, totaling 23 miles. Approximately 7 percent of the study area is influenced by these features.

The area affected by water developments accounts for less than half of the total area influenced by unnatural features. Most of the water developments occur in two general locations; the northern part of the panhandle and the central portion located to the north and east of the Lone Mountain area. Several other water developments are scattered around the perimeter of the study area.

Individually, most of these water developments influence a relatively small area. Many of the reservoirs are located in shallow drainages and can be seen from only the immediate vicinity of the drainage. Other developments, including several of the guzzlers, are located on hillsides facing away from higher terrain, thus limiting the area from which they can be viewed.

A large reservoir in the northern end of the WSA, a guzzler, a group of two reservoirs and several segments of vehicle ways located in the southwest corner are within fairly wide valleys. Because of their location, they influence a larger acreage than the majority of the water developments.

Three other water developments also influence a fairly large area due to their location below Catlow Rim (two along the northern boundary and one along the western boundary). Because of their location low on the steep slope of the rim, they are visible from much of the higher terrain.

The area from which the 32 vehicle ways can be seen accounts for about half of the area influenced by unnatural features. As with most of the reservoirs, the ways are located in the northern and central portions of the WSA and individually have a very small influence on the WSA as a whole. The remaining two developments, a fence and an old mining site, have little influence on the area.

The most noticeable outside sights and sounds are the roads which form the boundary line of most of the area; they are easily visible from the perimeter acreage of the WSA. These roads represent a visual contrast which is noticeable, but not significant enough to detract from the natural appearance of the WSA. Other outside sights have a very minor influence on the WSA. These features include two crested wheatgrass seedings, a ranch, a cow camp and several small water developments.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

Opportunities for solitude in the Rincon WSA are outstanding. These opportunities are enhanced by the area's large size and diverse topography, particularly the rolling hills found within much of the area, the rugged rock outcroppings around Lone Mountain and the rims and elevation differences associated with Catlow Rim and Oregon End Table. The only vegetative screening is the western juniper on the south side of Lone Mountain around Juniper Spring and Granite Spring. For the WSA as a whole, vegetative screening does not enhance opportunities for solitude.

The area provides outstanding opportunities for primitive forms of recreation, including day hiking, camping, backpacking, horseback riding, hunting, observing wildlife, sightseeing and photography.

The primary attractions for day hiking within the Rincon WSA would be Catlow Rim and the Lone Mountain area. Several of the steep drainages which cut into Catlow Rim provide challenging access to the top of the rim. The rock outcroppings around Lone Mountain would be of interest and would also present a challenge to the hiker. Other features which might be of interest to a hiker include Oregon End Table and the small canyons, which drain into Long Draw, along the southern boundary.

These features would also be of interest to a backpacker or horseback rider. Most of the terrain has abundant level areas suitable for camping. The limiting factor for overnight stays is the availability of water.

Game species which can be hunted within the area include mule deer, antelope and chukars. The northern end of the WSA is particularly good for deer hunting, while the opportunities for chukar hunting are best along Catlow Rim. Opportunities for antelope hunting are only fair due to the low number of animals within such a large area.

Opportunities for observing wildlife (especially raptors along Catlow Rim), sightseeing and photography are outstanding within the WSA. The areas around Catlow Rim, Lone Mountain, Oregon End Table and various other points around the WSA provide opportunities for sightseeing and photography. Broad vistas with views of the surrounding topography are available throughout most of the study area, while the rock formations around Lone Mountain, the rugged face of Catlow Rim and other features of the area provide interesting views and photographic settings.

Special Features

There are several features in the Rincon WSA which add to the value of the area as wilderness, including wildlife, geologic, cultural and vegetative features.

Wildlife is a special feature within this study area because of the high-quality raptor nesting area and an area of crucial antelope winter range. The raptor area includes the 15 miles of Catlow Rim located within the northern portion of the WSA. This is the southern end of a 31-mile long area identified by the U.S. Fish and Wildlife Service in its February 1980 publication, "Important Fish and Wildlife Habitat of Oregon." The importance of this area is due primarily to the high density of raptor species using the area (see Map 6).

Crucial deer winter range is located in the northwest corner below Catlow Rim. The crucial antelope winter range is located in the southeastern portion of the WSA and includes most of the Oregon End Table area. The study area also includes habitat for bighorn sheep in the Lone Mountain area. Kit fox, on the ODFW list of Threatened or Endangered species, may range into the lower elevations in the southern end of the WSA. Six sage grouse strutting grounds and accompanying nesting sites are located within the WSA. These birds are a candidate species for Federal listing as threatened or endangered.

The geology of the WSA is a special feature mainly because of Catlow Rim. Catlow Rim is a prominent fault scarp which forms the western edge of the southern topographic unit of the Steens Mountain fault block. In addition, the rim also serves as the eastern boundary of Catlow Valley, a prominent structural basin or tectonic depression. This basin or depression, especially along Catlow Rim, is characterized by ancient shoreline features such as gravel bars, spits, wave-built terraces and wave-cut benches which are obvious evidence of a lake that occurred in Catlow Valley during the Pleistocene glacial period. Catlow Rim has also been identified as a geological sightseeing area because of its uniqueness and size.

Noteworthy cultural resource sites in the WSA include a well-known cave and an area with a considerable amount of rock art. The cave was the focus of a pioneering archeological study in this part of southeastern Oregon. The rock carvings are located in a little studied part of the State. (See the Cultural Resources section for more detailed information.)

There is one plant species of special interest in the WSA, *Phacelia gymnoclada.* (See the Vegetation section for additional information.)

Diversity in National Wilderness Preservation System (NWPS)

According to the Bailey-Kuchler system of classifying ecosystems, the Rincon WSA is in the Intermountain Sagebrush Province and the potential natural vegetation is sagebrush steppe.

The Oregon Natural Heritage Plan identifies seven plant communities which occur in the Rincon WSA. They are big sagebrush/bluebunch wheatgrass, Indian ricegrass-needlegrass community, big sagebrush/spiny hopsage, big sagebrush-bitterbrush with Idaho fescue, low sagebrush/Idaho fescue, big sagebrush/Idaho fescue, and a black sagebrush community complex within the Basin and Range physiographic province.

The study area is within five hours' driving time of two standard metropolitan statistical areas with populations over 100,000: Boise, Idaho and Reno, Nevada.

Energy and Mineral Development

The geology, energy and mineral resources of the Rincon WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, correlating rock units in the WSA with similar environments in areas known to contain mineral resources and by evaluating a geochemical sampling program conducted by BLM. Technical details of the evaluation are in a mineral resources assessment report, "Catlow Rim Geologic Resource Area (GRA), Harney County Oregon," prepared by TERRADATA (a consulting firm under contract with BLM) and in a BLM report on Fields geologic resource area.

The WSA is within the Catlow Rim GRA which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level). A description of the rating system is provided in the Statewide EIS volume.

Table 3 shows the energy and mineral classifications in the study area. Map 5 shows where energy and mineral resources have moderate or high potential for occurrence in the WSA.

The surface rocks are composed mainly of Tertiary, volcanically-derived units which fall into three general age groups. The oldest group is composed of Miocene basalt flows, locally occurring andesite and basalt flows with minor interbeds of tuffaceous sedimentary rocks and tuffs, welded tuffs, and tuffaceous sedimentary rocks and tuffs of the Trout Creek formation.

The second group of rocks consists of Pliocene, lacustrine (lake) deposit tuffaceous sandstone, silstone, ashy diatomite and interbedded flows of basaltic and andesitic composition.

The youngest rocks consist of Quaternary volcanic domes and flows of rhyodacitic composition, composite volcanos composed of basalt and andesite, pyroclastic rocks from basaltic cinder cones, a few dikes and sills of basaltic or gabbroic composition and alluvial deposits of gravel, silt and sand.

Energy Resources

The WSA is rated as having a low potential for the occurrence of energy resources. There were no energy leases within the WSA as of October 16, l987.

Mineral Resources

The entire WSA has been rated moderately favorable for the occurrence of metals. However, a portion of the area rated moderate for the occurrence of metals, in the Lone Mountain area, has a higher confidence level than the rest of the study area. This area is analogous to the geologic environment found in the Pueblo and Steens Mountains where hydrothermal deposition of copper, mercury and accessory gold has been found in silicified fault zones.

Portions of the WSA are rated moderately favorable for the occurrence of diatomite. There are numerous tuffaceous sedimentary beds (both floodplain and lake deposits) within the WSA where diatomite occurrences have been reported during geologic mapping. Similar geologic units in Tertiary basins of southeastern Oregon contain diatomite deposits.

Mercury and copper are strategic and critical minerals with moderate potential for occurrence in the area; however, no strategic and critical mineral deposits are known to exist in the WSA.

Aside from abundant road aggregate sources, there are no known mineral deposits in the Rincon WSA. As of October 16, 1987, there were no mining claims in the WSA.

Vegetation

The major vegetative communities in the Rincon WSA are big sagebrush/bunchgrass communities. On the uplands with little or no slope, the major species are big sagebrush, Thurber's needlegrass, Sandberg's bluegrass, squirreltail, cheatgrass and, in the Fields Basin, bitterbrush. The steeper south slopes have bluebunch wheatgrass as the dominant grass. On the north slopes, the primary species include Idaho fescue, bluegrasses, big sagebrush and snowberry.

Most of the big sagebrush communities are estimated to be in the mid-seral stage, especially areas with little or no slope. The steeper slopes are estimated to be in the late seral stage. The major potential natural community species on the uplands and south slopes are bluebunch wheatgrass, big sagebrush and bitterbrush where it occurs. On the north slopes the potential natural community species are Idaho fescue, big sagebrush and snowberry.

A low sagebrush community occurs in areas which are flat, rocky and have shallow soils. The current ecological status is estimated to be mid- to late seral. The potential natural vegetation is mainly low sagebrush and Idaho fescue.

On Oregon End Table, there is a black sagebrush community. The current ecological status is mid- to late seral. The potential natural community is black sagebrush and Sandberg's bluegrass.

One small but unique area containing western juniper occurs on the southwest side of Lone Mountain near Juniper Spring and Granite Spring. The species commonly found in this area include western juniper, mountain mahogany, big sagebrush, several species of bluegrass, needlegrass, bluebunch wheatgrass and a variety of forbs.

The area is unique due to the presence of juniper. The juniper grows on and around the columnar rock outcrops. No other juniper stands occur in this portion of the district. The nearest stands are in the Steens Mountain area 15 miles to the north and in the Pine Forest Mountains 20 miles to the south. The ecological status of this area is not clearly known, but is probably late seral, with the primary potential natural community being western juniper, big sagebrush and bunchgrasses.

A plant species of special interest known to exist within the WSA is *Phacelia gymnoclada* (thick-leaved phacelia). This plant is listed in the Oregon Natural Heritage Plan's "Rare, Threatened or Endangered Plants and Animals of Oregon", 1987.

Wildlife

The Rincon WSA provides habitat for wildlife species using the big sagebrush, low sagebrush, and antelope bitterbrush habitats. Cliffs and rugged canyons provide additional habitat for many species. The distribution of springs, reservoirs and other water sources is fair, but many areas have no water.

An estimated 20 California bighorn sheep, a candidate for Federal listing as threatened or endangered, range along Catlow Rim in the northwestern part of the WSA. These sheep usually remain within .5 mile of the rim. Most of the use is in the northern portion near Fields Basin and in the southern portion near Lone Mountain. Most of winter deer use is in the northwestern corner of the WSA below Catlow Rim, along the west side of the WSA. Deer winter at lower elevations along the west side of the WSA.

Antelope winter in the southern part of the WSA and summer where low sagebrush flats have adequate water. Some winters, over 2,000 antelope stay near

Big Springs Table (mostly in Nevada), but move onto Oregon End Table in the southeastern portion of the study area. This part of the study area has been identified as crucial antelope winter range.

Four usually-active golden eagle nests and six usually-active prairie falcon nests are on Catlow Rim above Long Hollow and overlooking Catlow Valley on the northwestern side of the study area. Fourteen other inactive golden eagle nests have been located in the WSA. American kestrels, great horned owls, long-eared owls and red-tailed hawks are other raptors using the area.

Sage grouse are found throughout most of the northern part of the WSA. Six sage grouse strutting grounds have been located in the WSA. Two of these had over 80 birds using them during 1987 counts.

Chukars are found where steep rocky rims occur. They are usually abundant on the northern end of the WSA near Long Hollow, the west edge of the study area above Catlow Valley, and the south side of Lone Mountain. Valley quail are occasionally observed, but are not abundant.

Kit fox, on ODFW's list of Threatened Species, may range into lower elevation habitat in the south end of the WSA.

Other wildlife species common to the WSA include western rattlesnake, common raven, common flicker, sage sparrow, Brewer's sparrow, horned lark, rock wren, sage thrasher, least chipmunk, antelope ground squirrel, black-tailed jackrabbit, mountain cottontail, kangaroo mouse, Great Basin pocket mouse, canyon mouse, bushy-tailed woodrat, coyote and small-footed myotis (bat).

Seven guzzlers have been installed on Lone Mountain and west of Catlow Rim. Two exclosures have been constructed in the Lone Mountain area to improve riparian habitat around Black Rock Spring and Long Hollow Spring. These two exclosures total approximately 80 acres.

Watershed

The Rincon WSA contains no perennial streams.

Livestock Grazing

Portions of three grazing allotments are located within the Rincon WSA. They are the Pueblo-Lone Mountain and South Steens allotments in the Burns District and Beatys Butte allotment in the Lakeview District. Table 4 summarizes the current estimated livestock use (in AUMs) and the seasons of use for the portion of all three allotments located within the WSA.

Existing livestock developments include 26 reservoirs, six spring developments and 23 miles of fence. Seven grazing operators use vehicles extensively in and along the boundary of the WSA for monitoring livestock, hauling horses and salting. Horses are used for gathering and managing livestock. There is a shortage of available forage in the Pueblo-Lone Mountain allotment.

Cultural Resources

Catlow Cave is located in the northwestern portion of the WSA along the Catlow Rim. Excavated in the 1930's by Luther Cressman, this was a major "Early Man" site located along ancient Lake Catlow.

There is important rock art in the southern portion of the WSA, by the Oregon End Table. These include carvings (petroglyphs) on rimrock and boulders, which may be associated with "hunting magic". These sites are generally undocumented but are well-preserved.

Recreation Use

Recreation use in the Rincon WSA is primarily oriented towards hunting. Mule deer, antelope and chukar are the most commonly hunted game species. It is estimated that deer hunting and chukar hunting account for moderate use while antelope hunting amounts to low use.

While antelope hunting is scattered throughout the WSA, deer hunting is concentrated in the northern portion of the WSA, with some use in the Lone Mountain area. Both deer and antelope hunters use vehicles as their primary means of access into the area; they use the existing dead-end roads and ways in getting to their destination.

Chukar hunters, on the other hand, generally hike into the area, leaving their vehicles along the boundary road. This is because the road along the area's western boundary line is close to the chukar hunting area along Catlow Rim.

Off-road use of vehicles is not common within the WSA.

The study area receives little primitive recreation use not associated with hunting. Primitive recreation use activities such as day hiking, backpacking, general sightseeing, horseback riding and wildlife viewing account for a low amount of use in the area.

Overall recreation use in the WSA amounts to less than 300 visitor days per year.

Local Personal Income

Livestock use at the current level of 7,054 AUMs and recreation use totaling 300 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $84,648 for livestock grazing and $3,600 related to recreation use of the WSA, for an overall total of $88,248. The Statewide EIS volume discusses the term local personal income and how income figures have been derived.

4. Environmental Consequences

Introduction

This section discusses the environmental consequences of implementing each of the alternatives. Resources and activities not significantly affected by any of the alternatives are not discussed. The Statewide volume discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness: 103,965 acres
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

All of the WSA would be designated wilderness, and wilderness values within the entire 103,965 acres would be protected by legislative mandate. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. Special features, including the high quality raptor nesting areas, crucial antelope and deer winter range, bighorn sheep habitat, the area's of geologic interest (Lone Mountain and Catlow Rim), cultural resource values, a plant species of special interest and six sage grouse strutting grounds would be protected.

Naturalness

The naturalness of the area's rugged basalt outcroppings around Lone Mountain, the rims and elevation differences associated with Catlow Rim and Oregon End Table, the overall diversity of the area's topography and the WSA's large size would be enhanced by the closure of 52 miles of ways influencing approximately 7,400 acres. This closure would eliminate vehicle use of the ways, allowing the ways to naturally revegetate and these areas to return to an unbroken sagebrush and grass landscape.

Construction of the two wildlife guzzlers would directly disturb 0.5 acres, and visually influence an additional 50 acres.

Maintenance of the existing 26 reservoirs and 6 spring developments would require heavy equipment access on 52 miles of ways approximately once every 10 years for each development. This infrequent amount of use would not prevent the ways from revegetating.

Solitude

Opportunities for solitude provided by the Catlow Rim escarpment, the rugged rock outcroppings around Lone Mountain, the overall diversity of the area's topography and the WSAs large size would improve slightly with the closure of 52 miles of ways and reduction of vehicle use in the area.

Construction of two wildlife guzzlers would impair opportunities for solitude in the immediate area. However, this would be a short-term impairment. Maintenance of the existing 26 reservoirs and six spring developments would require the use of heavy equipment approximately once every 10 years for each facility. This maintenance activity would cause minor local impairment of solitude.

Primitive and Unconfined Recreation

Closure of the 52 miles of ways to motorized vehicle use would increase the opportunities for participating in primitive and unconfined recreation activities such as day hiking, camping, backpacking, horseback riding, hunting, wildlife observation, sightseeing and photography within the study area. The quality of these activities would improve with the closure and natural revegetation of the ways. A more natural, primitive and wild setting would be provided.

Special Features

Eliminating motorized vehicle use on the 52 miles of ways would reduce potential impacts to the area's special features, including wildlife, geologic, cultural and vegetative features. These impacts include impairment of scenic vistas and minor seasonal disturbance to wildlife species that inhabit these areas.

The significant cultural resources of the WSA, including Catlow Cave in the northern portion and the substantial amount of well-preserved rock art in the southern portion, would receive a minor increase in protection due to the reduction in vehicular access under this alternative.

Overall, the special features within the study area would be protected from future exploration or development of mineral resources because wilderness designation would close 97,545 acres of public land to mineral entry.

Conclusion: Wilderness designation of the entire 103,965 acres within the Rincon WSA would result in the protection of the existing wilderness values and probable enhancement of those values.

Impacts on Energy and Mineral Development

Wilderness designation would close 97,545 acres within the WSA to mineral entry. The 120 acres of private lands and 6,420 acres of split-estate lands would be open to mineral exploration.

Energy Development

The entire WSA has a low potential for the occurrence of energy resources and there are no energy leases within the entire WSA; therefore, no energy exploration or development is projected.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for copper, mercury and gold would be precluded on 97,545 acres. Exploration could occur on the 120-acre private parcel and 6,420 acres of split-estate lands; however, it is postulated that only casual exploration, without development, would occur on these lands.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Wilderness designation would not introduce significant new conditions or influences to the WSA as a whole. Therefore, the vegetative composition, as described in the Vegetation section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid- to late seral stage overall.

The 52 miles of existing ways, once closed to vehicle use, would naturally revegetate with annual forbs and grasses within approximately two growing seasons. Sagebrush would become established in these ways within five years. The installation of two wildlife guzzlers would disturb native vegetation on less than 0.5 acres and sagebrush would become reestablished on the site within 3 years.

Conclusion: The 52 miles of ways, totaling 52 acres, would revegetate. Overall vegetation would remain unchanged.

Impacts on Wildlife

Wildlife habitat for a summer population of 300 deer and 200 antelope and for a winter population of 400 deer and 100 antelope, and a yearlong population of 20 bighorn sheep would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives. The reintroduction of bighorn sheep near Lone Mountain would occur with an expected population increase to 75 sheep over the long term.

Access to maintain the seven guzzlers in the WSA would be on foot or horseback. This would be a problem for maintaining seven guzzlers which lie more than 1 mile from the nearest open road. When substantial repairs became necessary these guzzlers would be abandoned due to difficult access. This would reduce water availability and habitat for chukars, some small animals and deer dependent on these water sources. Populations of these small animals would decline slightly due to less water being available. Chukars and deer would move to other water sources.

Two low maintenance type guzzlers would be constructed to improve habitat. This additional water would help offset the loss of water sources through abandonment described above and would locally increase some populations of bighorn sheep, deer, antelope, sage grouse, chukars and nongame species.

The proposed 6,000-acre controlled burn designed to improve antelope summer range and the 1,870 acres of proposed brush control to improve livestock forage and water developments would not be allowed and an opportunity to convert big sagebrush habitats to herbaceous cover and increase antelope numbers by 80 head would be foregone. Sage grouse and chukar habitat would not be affected.

The closure of 52 miles of ways would have little impact on wildlife over almost all of the WSA due to the light use that now occurs. Less disturbance to chukars and valley quail from hunters would occur due to the closure of ways and roads. Sage grouse would not be impacted by changes in vehicle access.

Conclusion: Wildlife habitat and populations would be maintained on 103,965 acres designated wilderness. Bighorn sheep populations would increase. Abandonment of guzzlers and exclosures would result in declining deer and small game populations.

Impacts on Livestock Grazing

Based on preliminary studies, a reduction in livestock grazing use of 1,255 AUMs is projected depending upon the results of monitoring. This reduction would result in a total livestock grazing use of 5,799 AUMs in the WSA.

In the Pueblo-Lone Mountain allotment, livestock grazing use would be reduced by 1,255 AUMs, thus the total use would change from 6,450 AUMs to 5,195 AUMs. Grazing use in South Steens and Beatys Butte allotments would remain unchanged.

Vehicle use for livestock management and facility inspection and maintenance on 52 miles of ways would be precluded. Annual inspection and maintenance of 23 miles of fences, not accessible to open roads, would be on foot or by the use of riding and pack animals. This would result in some inconvenience and additional expense to the livestock operators. Maintenance of the 26 existing reservoirs and 6 spring developments would require the use of heavy equipment approximately once every 10 years.

Conclusion: Livestock grazing use would be reduced by 1,255 AUMs. Vehicle use on 52 miles of ways would be precluded with some inconvenience and additional expense to livestock operators.

Impacts on Recreation Use

Except for the 13.5 miles of dead-end roads that would remain open under this alternative, the entire 103,965 acres of the WSA would be closed to motorized recreation use, including 52 miles of ways. This closure would cause some reduction in vehicle-oriented recreation use in the WSA, mostly affecting big game hunting.

Primitive recreation would be expected to increase slightly. Vehicle-oriented recreation is expected to be displaced into other areas or to be partially substituted by primitive recreation activities. Some vehicle-oriented recreationists, primarily hunters, may continue to use the WSA, traveling by foot or by horseback. There would also be some continued vehicle-oriented hunting use since the 13.5 miles of dead-end roads would remain open under this alternative. Chukar hunting would not be substantially affected because chukar hunters generally hike into the WSA. Projected use patterns indicate that the current level of 300 visitor days per year would decrease over time, to more than 200 visitor days per year.

Conclusion: Wilderness designation would result in a net reduction in the area's overall recreation use of approximately 300 visitor days per year to a total of 200 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would decrease by 1,255 AUMs. Overall recreation use would decrease by 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $16,260 per year.

Conclusion: Annual local personal income generated by resource outputs in the WSA would decrease by approximately $16,000.

Enhanced Wilderness Alternative

Recommended suitable for wilderness: 104,085 acres
(assuming acquisition of 120 acres of private land)
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

The enhanced wilderness alternative would add 104,085 acres to the NWPS, with acquisition of the 120 acres of private land. An attempt would be made to acquire the mineral estate of 6,420 acres of split-estate lands. The effects of this alternative would be nearly the same as the all wilderness alternative; however, acquisition of the private land and mineral estate would prevent potential disturbance from mineral exploration on these parcels. This would improve the wilderness qualities of the area. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. Special features, including scenic values associated with Catlow Rim and Lone Mountain, the high quality raptor nesting areas, crucial antelope and deer winter range, bighorn sheep habitat, the areas of geologic interest (Lone Mountain and Catlow Rim), cultural resources values, a plant species of special interest and a sage grouse strutting ground would be protected.

Naturalness

The naturalness of the area's rugged basalt outcroppings around Lone Mountain, the rims and elevation differences associated with Catlow Rim and Oregon End Table, the overall diversity of the area's topography and the WSA's large size would be slightly enhanced by the closure of 52 miles of ways and 13.5 miles of dead-end roads. The closure of the ways would influence 7,400 acres and the roads influence 2,700 acres for a total of 10,100 acres visually influenced. This closure would eliminate vehicle use of the roads and ways, allowing them to naturally revegetate and return to an unbroken sagebrush and grass landscape.

Construction of two guzzlers would directly disturb less than 0.5 acre and visually influence an additional 50 acres.

Maintenance of the existing 26 reservoirs and six spring developments would require heavy equipment access on 52 miles of ways and 13.5 miles of dead-end roads approximately once every 10 years for each development. This infrequent amount of use would not prevent the roads and ways from revegetating.

Solitude

Opportunities for solitude provided by the Catlow Rim escarpment, the rugged rock outcroppings around Lone Mountain, the overall diversity of the area's topography and the WSAs large size would improve slightly with the closure of 52 miles of ways and 13.5 miles of dead-end roads and elimination of vehicle use in the area. Acquisition of the private land and mineral estate of the split-estate lands would increase opportunities for solitude by precluding mineral exploration.

Maintenance of the existing 26 reservoirs and 6 spring developments would require the use of heavy equipment approximately once every 10 years for each facility. This maintenance activity would cause minor local impairment of solitude.

Primitive and Unconfined Recreation

Closure of the 52 miles of ways and 13.5 miles of dead-end roads to motorized vehicle use would increase the opportunities for participating in primitive and unconfined recreation activities such as day hiking, camping, backpacking, horseback riding, hunting, wildlife observation, sightseeing and photography within the study area. The quality of these activities would improve with the closure and natural revegetation of the roads and ways. A more natural, primitive and wild setting would be provided.

Special Features

Eliminating motorized vehicle use on the 13.5 miles of dead-end roads and 52 miles of ways would reduce potential impacts to the areas special features, including wildlife, geologic, cultural and vegetative features. These impacts include impairment of scenic vistas and minor seasonal disturbance to wildlife species that inhabit these areas.

The significant cultural resources of the WSA, including Catlow Cave in the northern portion and the substantial amount of well-preserved rock art in the southern portion, would receive a slight increase in protection due to the elimination of vehicular access under this alternative.

Overall, the special features within the study area would be protected from future exploration or development of mineral resources because wilderness designation would close 104,085 acres to mineral entry.

Conclusion: Wilderness designation of the 104,085 acres would result in the protection of the existing wilderness values and probable enhancement of those values.

Impacts on Energy and Mineral Development

Wilderness designation would close 104,085 acres within the WSA to mineral entry, assuming acquisition of the 120 acres of private land and mineral estate of 6,420 acres of split-estate lands.

Energy Development

The entire WSA has a low potential for the occurrence of energy resources and there are no energy leases within the entire WSA; therefore, no energy exploration and development is projected.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for copper, mercury and gold would be precluded on 104,085 acres, assuming acquisition of the 120-acre private parcel and mineral estate of 6,420 acres of split-estate lands. Due to the lack of sufficient geological evidence to justify an extensive exploration/development program, only casual exploration, without development, is expected.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Wilderness designation would not introduce any significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the Vegetation section of the Affected Environment, would not substantially change, nor would the ecological status, which is currently in the mid- to late seral stage overall.

The 13.5 miles of dead-end roads and 52 miles of existing ways (totaling 79 acres), once closed to vehicle use, would naturally revegetate with annual forbs and grasses within approximately two growing seasons. Sagebrush would become established in these roads ways within five years.

The installation of two wildlife guzzlers would disturb native vegetation on less than 0.5 acre, and sagebrush would be reestablished on the site within three years.

Conclusion: The 13.5 miles of dead-end roads and 52 miles of ways, totaling 79 acres, would naturally revegetate. Overall vegetation would remain unchanged.

Impacts on Wildlife

Wildlife habitat for a summer population of 300 deer and 200 antelope, a winter population of 400 deer and 100 antelope and a yearlong population of 20 bighorn sheep would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives. The reintroduction of bighorn sheep near Lone Mountain would occur with an expected population increase to 75 sheep over the long term.

Access to maintain the seven guzzlers and two exclosures around springs in the WSA would be on foot or horseback. This would be a problem for maintaining the seven guzzlers which lie more than 1 mile from the nearest open road. When substantial repairs became necessary, these guzzlers and exclosures would be abandoned due to difficult access. This would reduce water availability and habitat for chukars, some small animals and deer dependent on these water sources. Populations of these small animals would decline slightly due to less water being available. Chukars and deer would move to other water sources.

Two low maintenance type guzzlers would be constructed to improve habitat. This additional water would help offset the loss of water sources lost through abandonment described above and would locally increase some populations of bighorn sheep, deer, antelope, sage grouse, chukars and nongame species.

The proposed 6,000-acre controlled burn designed to improve antelope summer range and the 1,870 acres of proposed brush control to improve livestock forage and water developments would not be allowed and an opportunity to convert big sagebrush habitats to herbaceous cover and increase antelope numbers by 80 head would be foregone. Kit fox, sage grouse and chukar habitat would not be affected.

The closure of 52 miles of ways and 13.5 miles of road would have little impact on wildlife over almost all of the WSA due to the light use that now occurs. Less disturbance to deer during the hunting season would occur in the Lone Mountain area. Less disturbance to chukars and valley quail from hunters would occur due to the closure of ways and roads. Sage grouse would not be impacted by changes in vehicle access. Acquisition of 120 acres of private property would contain two springs that are heavily used by wildlife.

Conclusion: Wildlife habitat and populations would be maintained on 104,085 acres designated wilderness. Bighorn sheep populations would increase. Abandonment of guzzlers and exclosures would result in declining deer and small game populations.

Impacts on Livestock Grazing

Based on preliminary studies, a reduction in livestock grazing use of 1,255 AUMs is projected, depending upon the results of monitoring. This reduction would result in a total livestock grazing use of 5,799 AUMs in the WSA.

In the Pueblo-Lone Mountain allotment, livestock grazing use would be reduced by 1,255 AUMs, thus the total use would change from 6,450 AUMs to 5,195 AUMs. Grazing use in South Steens and Beatys Butte allotments would remain unchanged.

Vehicle use for livestock management and facility inspection and maintenance on 13.5 miles of dead-end roads and 52 miles of ways would be precluded. Annual inspection and maintenance of 23 miles of fences, not accessible to open roads, would be on foot or by the use of riding and pack animals. This would result in some inconvenience and additional expense to the livestock operators. Maintenance of the 26 existing reservoirs and 6 spring developments would require the use of heavy equipment approximately once every 10 years.

Conclusion: Livestock grazing use would be reduced by 1,255 AUMs. Vehicle use on 52 miles of ways and 13.5 miles of dead-end roads would be precluded with some inconvenience and additional expense to livestock operators.

Impacts on Recreation Use

The entire 104,085 acres of the WSA would be closed to motorized recreation use, including 13.5 miles of dead-end roads and 52 miles of ways. This closure would eliminate vehicle-oriented recreation use in the WSA, mostly affecting big game hunting. Projected use patterns indicate that the current level of 300 visitor days per year would decrease over time, to 200 visitor days per year.

Primitive recreation would be expected to increase slightly. Vehicle-oriented recreation is expected to be displaced into other areas or to be partially substituted by primitive recreation activities. Some vehicle-oriented recreationists, primarily hunters, may continue to use the WSA, traveling by foot or by horseback. Chukar hunting would not be substantially affected because chukar hunters generally hike into the WSA.

Conclusion: Wilderness designation would result in a net reduction in the area's overall recreation use of approximately 300 visitor days per year to a total of 200 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would decrease by 1,255 AUMs. Overall recreation use would decrease by 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $16,260 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $16,000.

Proposed Action

Recommended suitable for wilderness: 19,428 acres
Recommended nonsuitable for wilderness: 84,537 acres

Impacts on Wilderness Values

The partial wilderness alternative would add 19,428 acres to the NWPS, including acquisition of the mineral estate of 1,500 acres of split-estate lands. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved in the northern portion of the study area recommended suitable. Special features, including scenic and geologic values associated with Catlow Rim, high quality raptor nesting sites, bighorn sheep habitat, five sage grouse strutting grounds and the Catlow Cave cultural resource would be protected.

Wilderness values of the 84,537 acres recommended nonsuitable, including those associated with the special features in this part of the study area (basically the Lone Mountain and Oregon End Table portions), including kit fox habitat, crucial antelope winter range, a sage grouse strutting ground, geologic features, cultural rock art and potential bighorn sheep habitat would not be protected, and could be subject to disturbance from other resource uses.

Under this alternative, 4 miles of ways would be closed to motorized vehicle use. The remaining 48 miles of ways and 13.5 miles of dead-end roads would remain open.

Naturalness

The naturalness of the area's Catlow Rim escarpment and the associated scenic values, as well as the rollings hills to the east and south would be slightly enhanced by the closure of 4 miles of ways influencing 570 acres. This closure would allow these ways to naturally revegetate and return to a sagebrush and grass landscape.

Construction of two guzzlers in the suitable portion would directly disturb less than 0.5 acre and visually influence an additional 50 acres. However, the direct disturbance would be short term as sagebrush would become reestablished in three years.

Reservoir maintenance would require heavy equipment access on the 4 miles of ways approximately once every 10 years for each of the three existing reservoirs located within the portion of the WSA recommended suitable. This amount of use would not prevent the ways from revegetating.

In the portion of the WSA recommended nonsuitable, continued vehicle use on the 13.5 miles of dead-end roads and 48 miles of ways would maintain the impact of vehicle tracks on naturalness on approximately 9,500 acres of the WSA.

Construction of the projected livestock developments, including a 1,870-acre burn-and-seed, three reservoirs, two spring developments, 23 miles of pipeline, 22 miles of fence, one water storage tank and the accompanying changes in livestock use patterns would directly impair naturalness on 1,900 acres and would visually influence approximately 7,000 acres. Construction of the projected wildlife projects, including a 6,000-acre burn would directly impair naturalness on 6,002 acres, and visually influence approximately 12,000 acres of the WSA. These projected developments will occur in the portion of the WSA recommended nonsuitable.

Solitude

Opportunities for solitude provided by the Catlow Rim escarpment and its drainages and the diverse topography of the remainder of the WSA would slightly improve with the closure of 4 miles of existing ways and a reduction in vehicle-oriented use. Vehicles would be limited to roads and ways in the portion of the WSA recommended nonsuitable, thus providing a core area for people to hike into and experience solitude with no disturbance from vehicles.

Maintenance of the existing three reservoirs would require the use of heavy equipment approximately once every 10 years for each facility. This maintenance activity would cause minor local impairment of solitude.

In the area recommended nonsuitable, continued vehicle use on 13.5 miles of dead-end roads and 48 miles of ways, and human activity associated with vehicle use and projected range and wildlife improvements, would cause repeated, but short-term impairment of solitude opportunities adjacent to these activities. Projected range improvements for this area includes 1,870 acres of burn-and-seed, 3 reservoirs, 2 spring developments, 23 miles of pipeline, 22 miles of fence and 1 water storage tank. Projected wildlife habitat improvement projects include a 6,000-acre burn. Solitude opportunities in the rest of the area would remain unchanged, with further declines from other potential uses over the long term.

Primitive and Unconfined Recreation

Closure of 4 miles of existing ways to motorized vehicle use would increase opportunities for participating in primitive and unconfined recreation activities such as hiking, sightseeing, hunting, photography, wildlife viewing, camping, backpacking, horseback riding and wildlife observation. The quality of these activities would improve with the elimination of motorized vehicle use and the revegetation of the ways. A more natural, primitive and wild setting would be provided in the area recommended suitable.

In the area recommended nonsuitable, the opportunities to participate in primitive and unconfined recreation would be reduced by the development of the projected range and wildlife habitat improvement developments and continued vehicle use of the 13.5 miles of dead-end roads and 48 miles of ways. Such use would continue to intrude upon primitive, nonmotorized recreation opportunities in the vicinity of the roads and ways, as well as the projected developments.

Special Features

Eliminating motorized vehicle use on the 4 miles of existing ways would reduce potential impacts to the area's special features. These impacts include vehicle use impairing scenic vistas and causing minor seasonal disturbance to wildlife that inhabit the study area. The ways traverse areas with populations of wildlife and also cross areas of scenic quality, resulting in a visual contrast not in harmony with the natural setting.

Special features, including kit fox habitat, crucial antelope winter range, a sage grouse strutting ground, geological features, cultural rock art and potential bighorn sheep habitat, associated with the area recommended nonsuitable would be subject to disturbance and impacts from possible development of other resources. Monitoring and mitigation measures would reduce or eliminate possible impacts. Continued vehicle use of the 13.5 miles of dead-end roads and 48 miles of ways that would remain open would maintain the impact on scenic vistas and minor seasonal disturbance to wildlife that inhabit this area.

The cultural resources of Catlow Cave, located in the northern portion of the WSA, would receive a slight increase in protection due to the elimination of vehicular access within the portion of the WSA recommended suitable for wilderness. The substantial amount of rock art, located in the southern portion of the WSA, would remain accessible by continued use of vehicles within this portion of the WSA recommended nonsuitable.

Conclusion: Wilderness designation of the 19,428 acres of the Rincon WSA would result in protection and enhancement of the existing wilderness values in the area. The 84,537 acres recommended nonsuitable would be subject to projected resource activities that would both directly and indirectly impair wilderness values over approximately 27,000 acres of the WSA, with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

Under the proposed action, 19,428 acres of public land, including 1,500 acres of split-estate land, would be closed to mineral entry. The 84,537 acres of public land recommended nonsuitable would remain open to energy and mineral exploration and development.

Energy Development

Energy exploration and development would be precluded on 19,428 acres within the WSA. The WSA has a low potential for the occurrence of energy resources and no energy leases; therefore, it is projected that no energy exploration or development will occur. This analysis also applies to the 84,537 acres recommended nonsuitable that would remain open to mineral entry.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for copper, mercury and gold would be precluded on 19,428 acres designated wilderness. Due to the lack of sufficient geological evidence to justify an extensive exploration and/or development program, it is postulated that only casual exploration, without development would occur on the 84,537 acres of the WSA recommended nonsuitable.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

The 4 miles of ways proposed to be closed, which are located within the portion of the WSA recommended suitable, would revegetate with annual forbs and grasses within two growing seasons. Sagebrush would become established on these ways within five years. Two guzzlers proposed to be constructed in the suitable area would disturb less than 0.5 acre of vegetation.

In the area recommended nonsuitable, the 48 miles of ways and 13.5 miles of dead-end roads would not revegetate due to continued use by vehicles. Projected range developments in this area include a 1,870-acre burn-and-seed, three reservoirs, two spring developments, 23 miles of pipeline, 22 miles of fence and one water storage tank, directly disturbing 1,901 acres and corresponding vegetative cover. Projected wildlife habitat improvement projects, including a 6,000-acre burn would directly disturb 6,002 acres and corresponding vegetative cover.

The brush control and seeding on 1,870 acres would result in the removal of sagebrush from the sagebrush/bunchgrass community and the addition of crested wheatgrass, a non-native species, as the dominant component in that community. This would reduce vegetation diversity by temporarily eliminating shrubs and forbs and converting the area to crested wheatgrass.

The proposed water developments would change current patterns of livestock distribution. This would have an effect primarily in the area near Oregon End Table and in Long Draw where, historically, cattle use has been light. Vegetative composition could change if areas are grazed at a more intense level than previously grazed. Conversely, areas that are currently heavily grazed could see a lessening in pressure and a recovery of vegetation in those specific areas. The ecological status, presently in the mid-seral stage, would not change and the gradual evolution of the area toward late seral may be slower with the change in grazing pressures. The impacts on the plant species of special interest from heavier grazing pressure is not known.

Conclusion: Four miles of ways in the area recommended suitable would revegetate. Projected management actions in the nonsuitable area would directly disturb approximately 7,900 acres and corresponding vegetative cover by converting natural sagebrush to crested wheatgrass and reducing diversity. The overall ecological status, which is currently in the mid- to late seral stage, would not change outside the proposed seeding.

Impacts on Wildlife

Wildlife habitat for a summer population of 300 deer and 300 antelope and for a winter population of 400 deer and 100 antelope and a yearlong population of 20 bighorn sheep would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives. The area recommended suitable for wilderness would contain 20 percent of the deer summer range, all of the deer winter range, 30 percent of the antelope summer range, none of the antelope winter range and all of the bighorn sheep range along South Catlow Rim. All of the area proposed for the reintroduction of bighorn sheep near Lone Mountain would be in the area recommended nonsuitable.

In the area recommended as suitable, access to maintain the one guzzler would be on foot or horseback. This would be a problem for maintaining this guzzler which lies more than 1 mile from the nearest open road. When substantial repairs become necessary, the guzzler would be abandoned due to difficult access. This would reduce water availability and habitat for chukars and some small animals dependent on these water sources. Populations of these small animals would decline slightly due to less water being available. Chukars would move to other water sources.

Also in the area recommended suitable, two low maintenance guzzlers would be constructed to improve habitat. This additional water would locally increase some populations of bighorn sheep, deer, antelope, sage grouse, chukars and nongame species.

In the area recommended nonsuitable, six guzzlers would be maintained using motor vehicles for access. This would maintain water availability and habitat for chukars and small animals.

The proposed 6,000-acre controlled burn designed to improve antelope summer range and the 1,870-acre brush control and water developments would change a big sagebrush community to one of herbaceous species favoring antelope. An increase of 100 summering antelope is expected due to the proposed brush control. Unburned cover strips would be left. However, the removal of big sagebrush would damage the habitat of those nongame species dependent on sagebrush.

Kit fox and sage grouse are not known to use the proposed brush control areas,but these areas would be inventoried prior to brush control to avoid and mitigate any possible damage to their habitat.

The closure of 4 miles of ways would have little impact on wildlife species due to the light vehicle use and location of the ways. Less disturbance to chukar and valley quail from hunters would occur due to the closure of ways. Vehicle use would have no impact on sage grouse strutting grounds due to the location of these areas away from ways.

Conclusion: Wildlife habitat and populations would be maintained on 19,428 acres designated wilderness. Bighorn sheep populations would increase. Abandonment of guzzlers and exclosures would result in declining deer and small game populations. Projected habitat improvement would allow an increase of 100 summering antelope.

Impacts on Livestock Grazing

Livestock grazing would remain at the current estimated use level of approximately 7,054 AUMs in the portions of the three grazing allotments located within the WSA. The seasons of use and distribution of AUMs for all three allotments are as shown in Table 4.

Vehicle use for livestock management and facility inspection and maintenance on 4 miles of ways would be precluded. This would result in some inconvenience and additional expense to the livestock operators. Annual inspection and maintenance of 4 miles of existing fence would be done on foot or by use of riding and pack animals. Heavy equipment would be used approximately once every 10 years to maintain the three existing reservoirs in the area recommended suitable for wilderness.

In the area recommended nonsuitable for wilderness, projected developments include: 1,870 acres of burn-and-seed, 3 reservoirs, 2 springs, 23 miles of pipeline, 22 miles of fence and 1 water storage tank. Vehicle use for livestock management and facility inspection and maintenance would continue on 48 miles of existing ways and 13.5 miles of dead-end roads. These developments would improve livestock management, protect spring sources and increase the amount of forage by 1,255 AUMs in the Pueblo-Lone Mountain allotment.

Conclusion: Livestock use would remain at 7,054 AUMs. Vehicle use on 4 miles of ways would be precluded with some inconvenience and additional expense to operators.

Impacts on Recreation Use

Motorized vehicle use would be precluded on 19,428 acres, including 4 miles of ways in the area recommended suitable. Vehicle-oriented recreation would be eliminated within this area, and would be displaced primarily into the adjacent 84,537 acres recommended nonsuitable where this type of use would be allowed. This would improve the quality of primitive recreation, which would increase slightly. Some of the vehicle-oriented users would continue to utilize the area, traveling by foot or horseback.

Under this alternative, opportunities for primitive types of recreation would be maintained in the northern portion of the WSA along Catlow Rim. There would be no significant change in visitor use as a result of closing vehicle ways within this area. Primitive recreation activities in the nonsuitable portion of the study area would be subject to a reduction in quality from projected developments. Proposed range improvements, especially in the Lone Mountain area, would have an adverse impact on primitive recreation. Projected use patterns indicate that the current level of 300 visitor days per year would increase over time, to 400 visitor days per year.

Conclusion: Recreation use would increase from the current level of 300 visitor days per year to approximately 400 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 7,054 AUMs. Overall recreation use would increase by 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $1,200 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by approximately $1,000.

No Wilderness/No Action

Recommended suitable for wilderness: 0 acres
Recommended nonsuitable for wilderness: 103,965 acres

Impacts on Wilderness Values

Under the no wilderness alternative, the entire 103,965 acres would not be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation and the area's special features, including high quality raptor nesting areas, crucial antelope winter range, bighorn sheep habitat, the area's of geologic interest, cultural resource values, a plant species of special interest and a sage grouse strutting ground would be subject to the effects of projected management actions, including range improvement projects, wildlife habitat improvement projects and continued vehicle use for recreation access.

Naturalness

Continued vehicle use of the 52 miles of existing ways and 13.5 miles of dead-end roads would maintain the impact of vehicle tracks and usage on naturalness, affecting approximately 10,100 (approximately 10 percent) of the WSA. Most of this influence upon the area's naturalness occurs in the south and central portions of the WSA.

The projected wildlife habitat improvement projects, including a 6,000-acre burn and construction of two wildlife guzzlers would directly impair 6,000 acres and visually influence approximately 12,000 acres.

Construction of projected range developments, including a 1,870-acre burn and seeding, 3 reservoirs, 2 spring developments, 25 miles of pipeline, 23 miles of fence, 2 water storage tanks and accompanying changes in livestock grazing patterns would directly impair naturalness on approximately 2,200 acres and visually influence 8,000 acres.

Solitude

Continued vehicle use of 52 miles of existing ways and 13.5 miles of dead-end roads, and human and mechanical activity associated with range improvement construction and maintenance, would cause repeated, but short-term, local impairment of solitude opportunities adjacent to these activities. The continually increasing use of vehicles for recreational pursuits would impair solitude opportunities in the vicinity of the roads and ways. Solitude opportunities in the remainder of the WSA would remain unchanged.

Primitive and Unconfined Recreation

Under this alternative, opportunities for participating in primitive recreation activities would be reduced by projected range developments and the continual use of vehicles for recreational pursuits, dependent upon project locations and the extent of disturbance to recreation activities.

The 52 miles of ways and 13.5 miles of dead-end roads would remain open, allowing for the continued and increasing use of these roads and ways by vehicles, which would limit and impair the ability to experience primitive recreation activities. Livestock developments, wildlife habitat improvement projects, and vehicle use for grazing management, as well as the continued vehicle-oriented hunting on the roads and ways would reduce opportunities for primitive and unconfined recreation on approximately 19,000 acres.

Special Features

The area's special features, including six sage grouse strutting grounds and accompanying nesting sites, scenery, the high quality raptor nesting areas, crucial antelope and deer winter range, bighorn sheep habitat, cultural resource values and a plant species of special interest, would be subject to disturbance from development of other resources, accompanying changes in land use patterns and the continued use of vehicles in the study area.

The significant cultural resources of the WSA, including Catlow Cave and the substantial amount of rock art, would remain accessible by continued use of vehicles within the study area.

Conclusion: In the absence of wilderness designation, projected management actions would both directly and indirectly impair wilderness values over approximately 28,000 acres of the WSA, with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

The entire area would be open to mineral entry.

Energy Development

The entire WSA has a low potential for the occurrence of energy resources and no energy leases; therefore, no energy exploration and development is projected.

Conclusion: No impact to energy development is expected.

Mineral Development

The entire 103,965 acres of the WSA would be open to mineral exploration and development. Copper, mercury and gold have a moderate potential for occurrence in the WSA. Due to the lack of sufficient geological evidence to justify an extensive exploration/development program, it is postulated that only casual exploration, without development, would occur.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Except for the areas proposed for seeding, the WSA's vegetative composition, as described in the Vegetation section of the Affected Environment, would not substantially change, nor would the ecological status change, which is in the mid- to late seral stage overall.

The 52 miles of ways and 13.5 miles of dead-end roads would not revegetate due to continued use by vehicles. Projected range developments would be constructed in the WSA, including a 1,870-acre burn-and-seed, 3 reservoirs, 2 spring developments, 25 miles of pipeline, 23 miles of fence and 2 water storage tanks, directly disturbing 1,927 acres and corresponding vegetative cover. Projected wildlife habitat improvement projects, including a 6,000-acre burn and two guzzlers would directly disturb vegetative cover on that area.

The brush control and seeding on 1,870 acres would result in the removal of sagebrush from the sagebrush/bunchgrass community and the addition of crested wheatgrass, a non-native species, as the dominant component in that community.
This would reduce vegetation diversity by temporarily eliminating shrubs and forbs and converting the area to crested wheatgrass. The ecological status would change from mid-seral status to a good or excellent condition in seeding sites.

The proposed water developments would change current patterns of livestock distribution. This would have an effect primarily in the area near Oregon End Table and in Long Draw where, historically, cattle use has been light. Vegetative composition could change if areas are grazed at a more intense level than previously grazed. Conversely, areas that are currently heavily grazed could see a lessening in pressure and a recovery of vegetation in those specific areas. The ecological status (presently in the mid-seral stage) would not change under the new grazing pattern, and the gradual evolution of the area toward late seral would be slower.

Conclusion: No revegetation would occur on any of the roads or ways due to continued use by vehicles. Projected management actions would directly disturb 7,929 acres of vegetation cover by burning sagebrush, converting sagebrush to crested wheatgrass and construction of structural range improvements.

Impacts on Wildlife

Wildlife habitat for a summer population of 300 deer and 300 antelope and for a winter population of 400 deer and 100 antelope and a yearlong population of 20 bighorn sheep would be maintained. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives. California bighorn sheep would be released near Lone Mountain.

Two low-maintenance type guzzlers would be constructed to improve habitat in the South Catlow Rim area. This additional water would locally increase some populations of bighorn sheep, deer, antelope, sage grouse, chukars and nongame species.

Seven guzzlers would be maintained using motor vehicles for access. This would maintain water availability and habitat for chukars and nongame animals.

The proposed 6,000-acre controlled burn designed to improve antelope summer range and the 1,870-acre brush control and water developments would change a big sagebrush community to one of herbaceous species favoring antelope populations. An increase of 100 summering antelope is expected due to the proposed brush control.

Kit fox and sage grouse are not known to use the proposed brush control areas but these areas would be inventoried prior to brush control to avoid and mitigate any possible damage to their habitat.

Conclusion: Populations of bighorn sheep, deer, antelope, sage grouse, chukars and nongame species would generally increase.

Proposed brush control would improve 7,870 acres of antelope habitat allowing an increase of 100 summering antelope. Nongame habitat would be damaged by brush control.

Impacts on Livestock Grazing

Livestock grazing would remain at the current estimated use level of approximately 7,054 AUMs in the portions of the three grazing allotments located within the WSA.

Under this alternative, all projected range improvements would be constructed, including a 1,870-acre burn-and-seed, 3 reservoirs, 2 springs, 25 miles of pipeline, 23 miles of fence and 2 water storage tanks. The 1,255 AUMs made available by those range improvements would be used to forestall a potential 4,000 AUM reduction in Pueblo-Lone Mountain allotment. Vehicle use for livestock management and facility inspection and maintenance would continue on 52 miles of existing ways and 13.5 miles of dead-end roads.

Conclusion: Livestock use would remain at 7,054 AUMs.

Impacts on Recreation Use

Vehicle-oriented recreation would increase within the WSA, involving the use of 52 miles of existing ways and 13.5 miles of dead-end roads. Primitive recreation activities would slightly decline as a result of continued vehicle-oriented recreation and projected livestock and wildlife developments. Correspondingly, human and mechanical activity would increase. Projected use patterns indicate that the current level of 300 visitor days per year would increase over time to 500 visitor days per year.

Conclusion: Recreation use would increase from the current level of 300 visitor days per year to approximately 500 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 7,054 AUMs. Overall recreation use would increase by 200 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $2,400 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by over $2,000.

Unavoidable Adverse Impacts of the Proposed Action

Under the Proposed Action (Partial Alternative), projected range developments would lead to unavoidable adverse impacts to wilderness values as a result of 1,900 acres of surface disturbance, which visually influences an additional 7,000 acres. Projected wildlife habitat improvement projects would result in 6,000 acres of surface disturbance and would visually influence an additional 12,050 acres. In the suitable portion, there would be some increase in livestock management costs as a result of the closure of 4 miles of ways.

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity

Under the Proposed Action, most existing short-term uses would continue, with some added minor inconvenience and expense to the livestock operators resulting from the exclusion of vehicles on 4 miles of ways for day-to-day inspection activities. Vehicle-oriented recreation uses, such as hunting, would be replaced by other types of primitive recreation activities. The long-term productivity of the wilderness values in the portion of the WSA recommended for wilderness designation would be preserved.

The long-term ability of the area to produce wilderness values would be directly and indirectly lost on over 27,000 acres due to projected range developments and wildlife habitat improvement projects in the nonsuitable area, with further declines from other potential uses over the long term.

Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, there would be no irreversible or irretrievable commitment of the wilderness resource or any other resources within the portion of the WSA recommended suitable for designation.

In the portion of the WSA recommended nonsuitable, range improvement developments, involving construction of 3 reservoirs, 2 spring developments, 25 miles of pipeline, 23 miles of fence, 2 water storage tanks and a 1,870-acre burn and seeding, would visually reduce wilderness values on approximately 9,000 acres. Projected wildlife habitat improvement projects would reduce some wilderness values (naturalness) on approximately 18,000 acres.

5. Wilderness Manageability and Rationale for the Proposed Action

Manageability of the Area as Wilderness

The areas under the all wilderness, enhanced wilderness and the Proposed Action alternatives are manageable as wilderness.

Under the all wilderness alternative, a number of scattered parcels of split-estate land and two small parcels of private land complicate management. However, no energy or mineral development is projected.

Rationale for the Selection of the Proposed Action

The area recommended as suitable for wilderness contains most of the southern end of Catlow Rim. This area is in a basically natural condition and has outstanding opportunities for solitude and primitive types of recreation. It also contains special features, including cultural resources, high-quality raptor nesting areas, bighorn sheep habitat and an area of geologic interest.

Designation of this portion of the study area as wilderness would protect the area's wilderness values and special features within an area that can be managed to preserve these qualities.

This portion of the study area has only minor conflicts with other resource uses. Like the rest of the WSA, this portion has been identified as having low potential for the occurrence of energy resources and moderate potential for the occurrence of mineral resources. Parts have moderate potential for the occurrence of diatomite. The range improvements which have been proposed for the study area would affect only a small portion of the southern end of the area recommended suitable for wilderness designation.

The wilderness values found in the area recommended as suitable outweigh the possible conflicts with other resources.

Some 84,537 acres of the Rincon WSA are recommended as nonsuitable for wilderness designation under this alternative because of the inconvenience and costs of maintaining range improvements without the use of vehicles, the benefits to be gained from improving wildlife habitat and range management, and the adverse influence of existing livestock facilities on naturalness and solitude.

The portion of the study area recommended nonsuitable under the partial alternative include part of the northeastern corner of the WSA's panhandle, the area around Lone Mountain and Oregon End Table.

Within the nonsuitable portions are two pockets of the WSA which have a greater concentration of range developments than the remainder of the area. These pockets occur in the northeast and in the east-central parts of the study area and have an adverse affect on naturalness in those portions of the WSA. Opportunities for solitude in the areas with concentrated range improvements would also be reduced by maintenance and livestock management activities at and around these developments.

6. Summary and Analysis of Public Comments

Following is a summary of public comments specific to the WSA concerning adequacy of the analysis in this appendix, and responses to those comments. These comments were received both in writing and oral testimony at public hearings during the comment periods for the 1985 Draft EIS and the 1987 Supplement to the Draft EIS. Comments concerning the BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning statewide issues and analysis are addressed in the Statewide volume.

Comment: Proposed burn could decrease sage grouse populations. **Response:** The proposed 6,000-acre controlled burn designed to improve antelope summer range and the 1,870-acre brush control and water developments would change a big sagebrush community to one of herbaceous species favoring antelope. Sage grouse are not known to use the general areas of proposed brush control, but these specific areas would be inventoried prior to brush control and avoided to mitigate any possible damage to sage grouse habitat.

Comment: EIS does not account for a proposed power corridor along Long Hollow Road. **Response:** The powerline and corridor are located outside the WSA boundary.

Comment: Natural rock arches were not included in Appendix. **Response:** No natural rock arches are known to occur within the boundary of the Rincon WSA.

Comment: Junipers are unique to the area located at Juniper Spring, not Granite Spring. **Response:** One small, but unique area containing western juniper occurs on the southwest side of Lone Mountain near Juniper Spring and Granite Spring. The species commonly found in this area include western juniper, mountain mahogany, big sagebrush, several species of bluegrass, needlegrass, bluebunch wheatgrass and a variety of forbs. This community is addressed in the Vegetation section under the Affected Environment.

Comment: What livestock developments, including spring improvements, exist in the Rincon WSA? **Response:** Existing livestock developments include 26 reservoirs, 6 spring developments and 23 miles of fence, as stated in the Affected Enviornment section under Livestock Grazing.

Comment: Close Long Hollow Road and combine Rincon WSA with the Hawksie-Walksie WSA. **Response:** This reference to Long Hollow Road is incorrect. The road in question is referred to as the Long Draw Road. Closing the boundary roads and combining the Rincon WSA with one or more of the adjacent study areas is not analyzed in the enhanced alternative. All of the boundary roads which surround the Rincon WSA provide access for livestock operators, recreationists, BLM personnel and private landowners. These are important access routes to areas where access is minimal; therefore, closing the roads is not feasible.

Comment: The area's unusual trout species were not considered and analyzed. **Response:** The Rincon WSA contains no perennial streams. No fish species occur in the WSA.

Table 1. Summary of Proposed Management Under Each Alternative, Rincon WSA (OR-2-82)

Proposed Management	All Wilderness	Enhanced Wilderness	Proposed Action	No Wilderness/ No Action
Acres Designated as Wilderness	103,965	103,965	19,428	0
Acres Closed to ORVs by Wilderness Designation	103,965	103,965	19,428	0
Miles of Roads Closed	0	13.5	0	0
Miles of Ways Closed	52	52	4	0
Acres of Full Fee Estate Acquired [1]	0	120	0	0
Acres of Mineral Estate Acquired [2]	0	6,420	1,500	0
Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation	97,545	97,545	17,928	0
Structural Wildlife Projects Developed: Catchments & Guzzlers (number)	2	2	2	2
Vegetative Manipulation for Wildlife: Brush Control without Seeding (acres)	0	0	6,000	6,000
Structural Livestock Projects Developed:				
Reservoirs & Waterholes (numbers)	0	0	3	3
Springs (numbers)	0	0	2	2
Pipelines (miles) [3]	0	0	23	25
Fences (miles)	0	0	22	23
Storage Tanks (numbers)	0	0	1	2
Vegetative Manipulation for Livestock Brush Control with Seeding (acres)	0	0	1,870	1,870
Decrease in Forage Allocation (AUMs)	1,255	1,255	0	0

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[1] Upon acquisition, these additional lands would be incorporated into the wilderness area, closed to vehicle use, and withdrawn from mineral location and leasing.

[2] Upon acquisition of mineral estate, these lands would be withdrawn from mineral location and leasing.

[3] Includes installation of three "bottomless" troughs.

Table 2. Summary of Environmental Consequences of Alternatives, Rincon WSA (OR-2-82)

Resource or Activity	All Wilderness	Enhanced Wilderness	Proposed Action	No Wilderness/No Action
Wilderness Values	Wilderness designation of the entire 103,965 acres within the Rincon WSA would result in the protection of the existing wilderness values and probable enhancement of those values.	Wilderness designation of the 104,085 acres would result in the protection of the existing wilderness values and probable enhancement of those values.	Wilderness designation of the 19,428 acres of the Rincon WSA would result in protection and enhancement of the existing wilderness values in the area. The 84,537 acres recommended nonsuitable would be subject to projected resource activities that would both directly and indirectly impair wilderness values over approximately 27,000 acres of the WSA, with further declines from other potential uses over the long term.	In the absence of wilderness designation, projected management actions would both directly and indirectly impair wilderness values over approximately 28,200 acres of the WSA, with further declines from other potential uses over the long term.
Energy and Mineral Development	No impact to energy or mineral development is expected.	No impact to energy or mineral development is expected.	No impact to energy or mineral development.	No impact to energy or mineral development is expected.
Vegetation	The 52 miles of ways would naturally revegetate. Overall vegetation would remain unchanged.	The 13.5 miles of dead-end roads and 52 miles of ways would naturally revegetate. Overall vegetation would remain unchanged.	The 4 miles of ways in the area recommended suitable would naturally revegetate. Projected management actions in the non-suitable area would directly disturb approximately 7,900 acres and corresponding vegetative cover by converting natural sagebrush to crested wheatgrass and reducing diversity. Overall ecological status would not change outside the proposed seedings.	No revegetation would occur on any roads or ways due to continued use by vehicles. Projected management actions would directly disturb 7,929 acres of vegetation cover by burning sagebrush, converting sagebrush to crested wheatgrass and construction of structural range improvements.
Wildlife	Wildlife habitat and populations would be maintained on 103,965 acres designated wilderness. Bighorn sheep populations would increase. Abandonment of guzzlers and exclosures would result in declining deer and small game populations.	Wildlife habitat and populations would be maintained on 104,085 acres designated wilderness. Bighorn sheep populations would increase. Abandonment of guzzlers and exclosures would result in declining deer and small game populations.	Wildlife habitat and populations would be maintained on 19,428 acres designated wilderness. Bighorn sheep populations would increase. Abandonment of guzzlers and exclosures would result in declining deer and small game populations.	Wildlife habitat and populations would be maintained on 103,965 acres. Populations of bighorn sheep, deer, antelope, sage grouse, chukars and nongame species would increase.
Livestock Grazing	Livestock grazing use would be reduced by 1,255 AUMs. Vehicle use on 52 miles of ways would be precluded with some inconvenience and additional expense to livestock operators.	Livestock grazing use would be reduced by 1,255 AUMs. Vehicle use of 52 miles of ways and 13.5 miles of dead-end roads would be precluded with some inconvenience and additional expense to livestock operators.	Livestock use would remain at 7,054 AUMs. Vehicle use on 4 miles of ways would be precluded with some inconvenience and additional expense to operators.	Livestock use would remain at 7,054 AUMs.
Recreation Use	Wilderness designation would result in a slight net reduction in the area's overall recreation use of approximately 300 visitor days per year to a total of 200 visitor days per year.	Wilderness designation would result in a minor net reduction in the area's overall recreation use of approximately 300 visitor days per year to a total of 200 visitor days per year.	Wilderness designation would result in a net increase in the area's overall recreation use level from currently 300 visitor days per year to approximately 400 visitor days per year.	The area's current overall recreation use level of 300 visitor days per year is projected to increase over time to approximately 500 visitor days per year.
Local Personal Income	Annual local personal income would decrease by approximately $16,000.	Annual local personal income would decrease by approximately $16,000.	Annual local personal income would increase by approximately $1,000.	Annual local personal income would increase by approximately $2,000.

Table 3. Classification of Energy and Mineral Potential, Rincon WSA (OR-2-82)

Commodity	Area	Level of Potential	Level of Certainty
Metals (copper, mercury, gold)	See Map 5	M	B
	Rest of WSA	M	A
Geothermal	Part of area not shown on Map 5	L	B
	Rest of WSA	O	B
Uranium/Thorium	Entire WSA	O	A
Coal	Entire WSA	L	C
Oil/Gas	Entire WSA	L	B
Tar Sands/Oil Shale	Entire WSA	O	C
Limestone	Entire WSA	O	A
Bentonite	Entire WSA	L	A
Diatomite	See Map 5	M	A
	Rest of WSA	L	B
Zeolites	Entire WSA	O	A

Legend:

Level of Potential

O - No indication for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Moderate potential for accumulations of energy/mineral resource
H - High potential for accumulations of energy/mineral resource

Level of Certainty

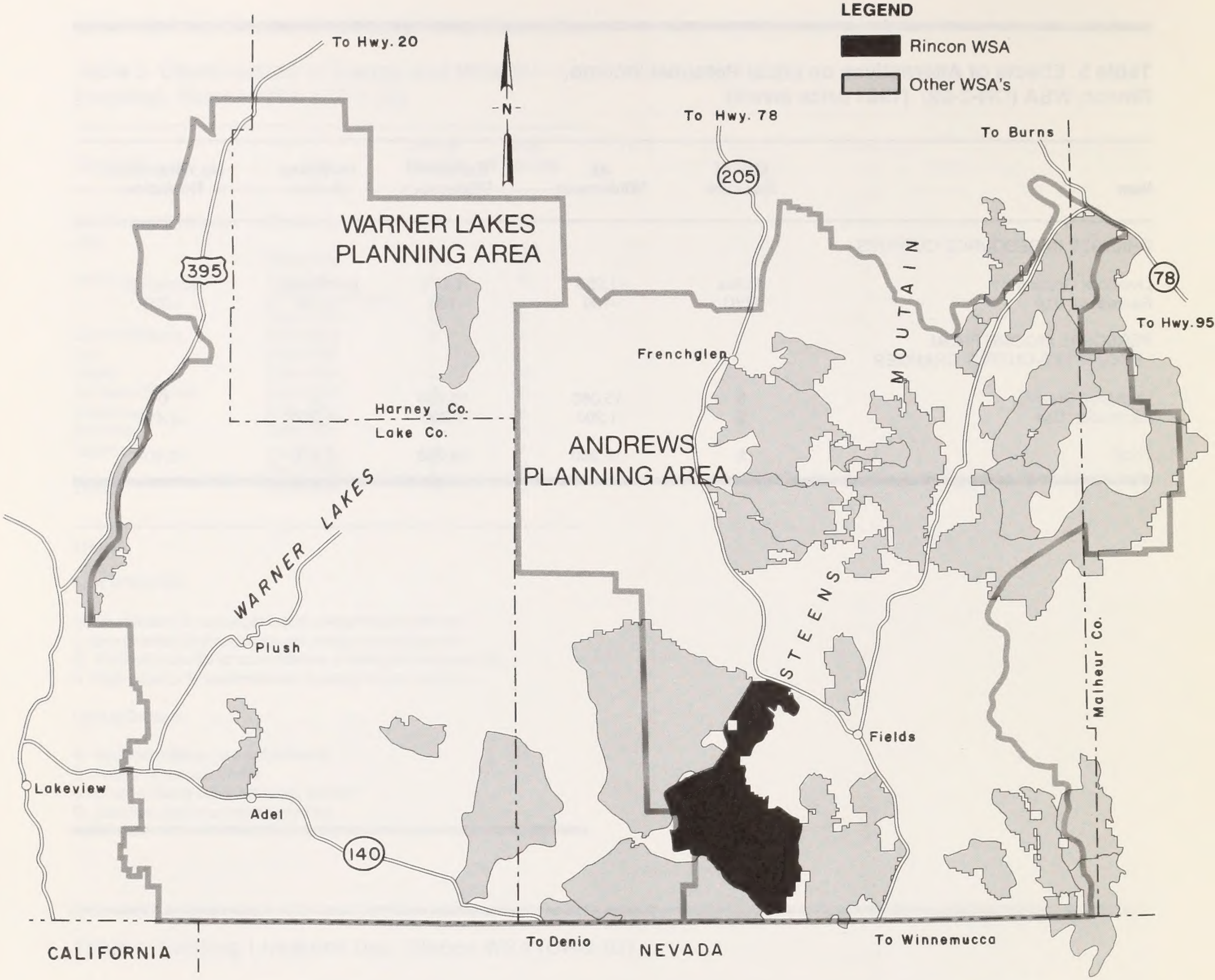
A - Insufficient data or no direct evidence
B - Indirect evidence available
C - Direct evidence but quantitatively minimal
D - Abundant direct and indirect evidence

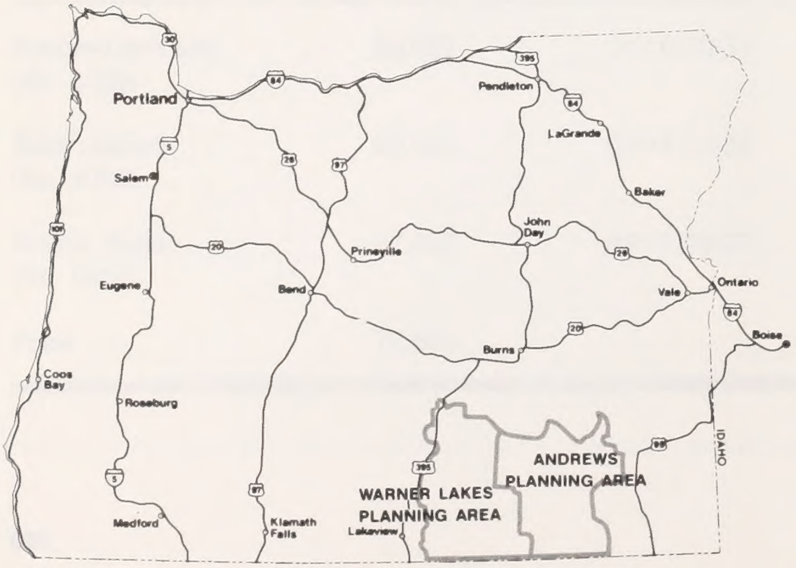
Table 4. Existing Livestock Use, Rincon WSA (OR-2-82)

Grazing Allotment	Licensed AUMs in Allot.	Period of Use	Percent of Allot. in WSA	Current Estimated Use in WSA (AUMs)
Pueblo-Lone Mtn. (No. 6020)	20,897	04/16-10/31	32	6,450
South Steens (No. 6002)	23,861	04/16-02/28	2	424
Beatys Butte (No. 0600)	27,892	06/16-09/30	0.5	180
Total	72,650			7,054

Table 5. Effects of Alternatives on Local Personal Income, Rincon WSA (OR-2-82) (1981 price levels)

Item	Unit of Measure	All Wilderness	Enhanced Wilderness	Proposed Action	No Wilderness/ No Action
CHANGES IN RESOURCE OUTPUTS					
Livestock Grazing	AUMs	-1,255	-1,255	No change	No change
Recreation Use	RVD	-100	-100	+100	+200
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES					
Livestock Grazing	$	-15,060	-15,060	0	0
Recreation Use	$	-1,200	-1,200	+1,200	+2,400
Total	$	-16,260	-16,260	+1,200	+2,400





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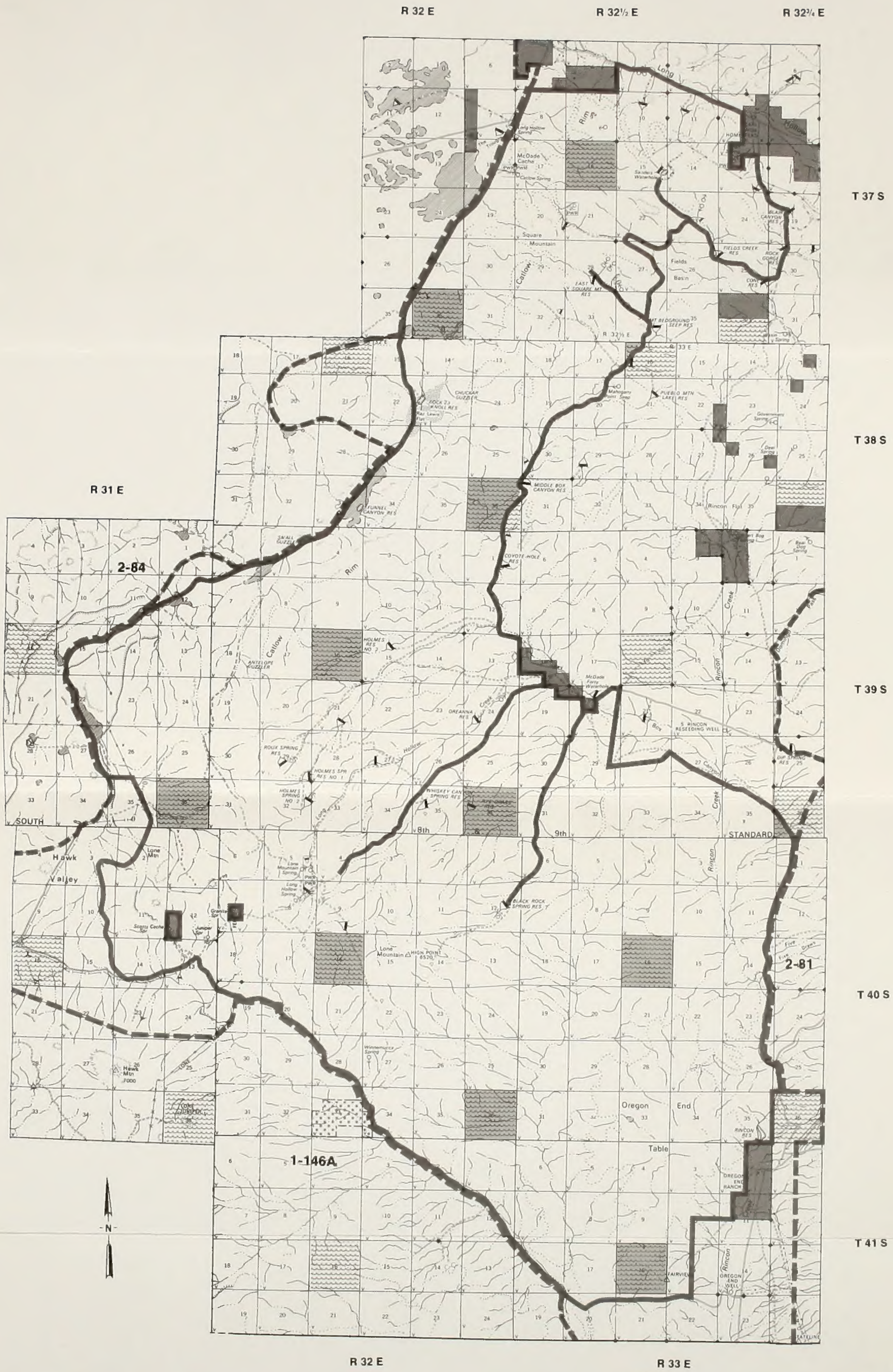
Burns/Lakeview Districts

Rincon WSA
OR-2-82

LOCATION MAP

10 0 10 MILES

MAP 1



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Burns/Lakeview Districts

Rincon WSA
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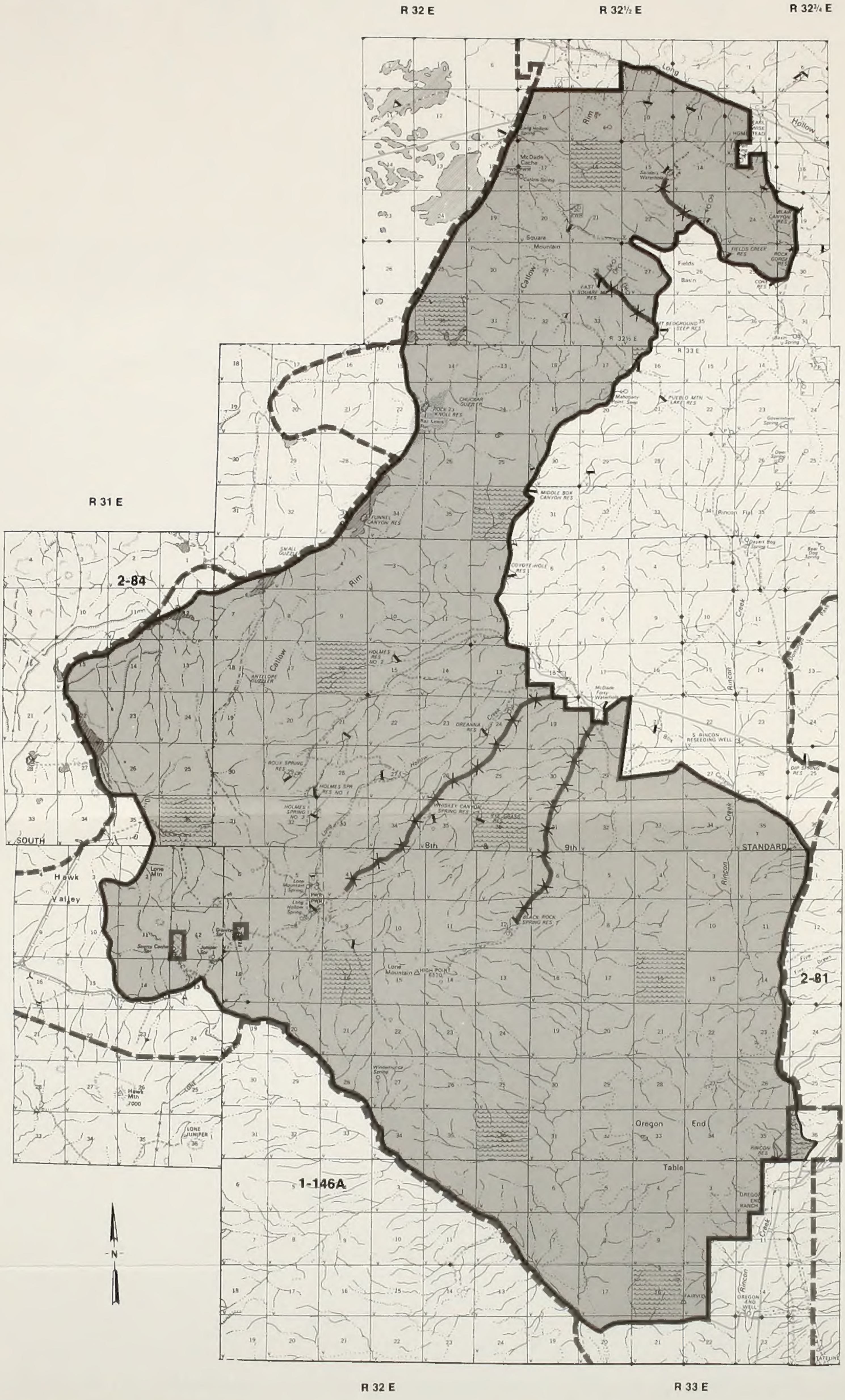
LAND OWNERSHIP

1 0 1 2 MILES

LEGEND

- ▒ BLM Land Studied Under Section 202 of FLPMA (Other BLM Land in WSA Studied Under Section 603 of FLPMA)
- ▬ Wilderness Study Area Boundary
- ▬ ▬ Boundary of Adjacent Wilderness Study Areas
- ☐ Bureau of Land Management
- ■ Private
- ▤ BLM Surface-State or Private Subsurface (Split Estate)
- ░ Long Draw Research Natural Area

MAP 2



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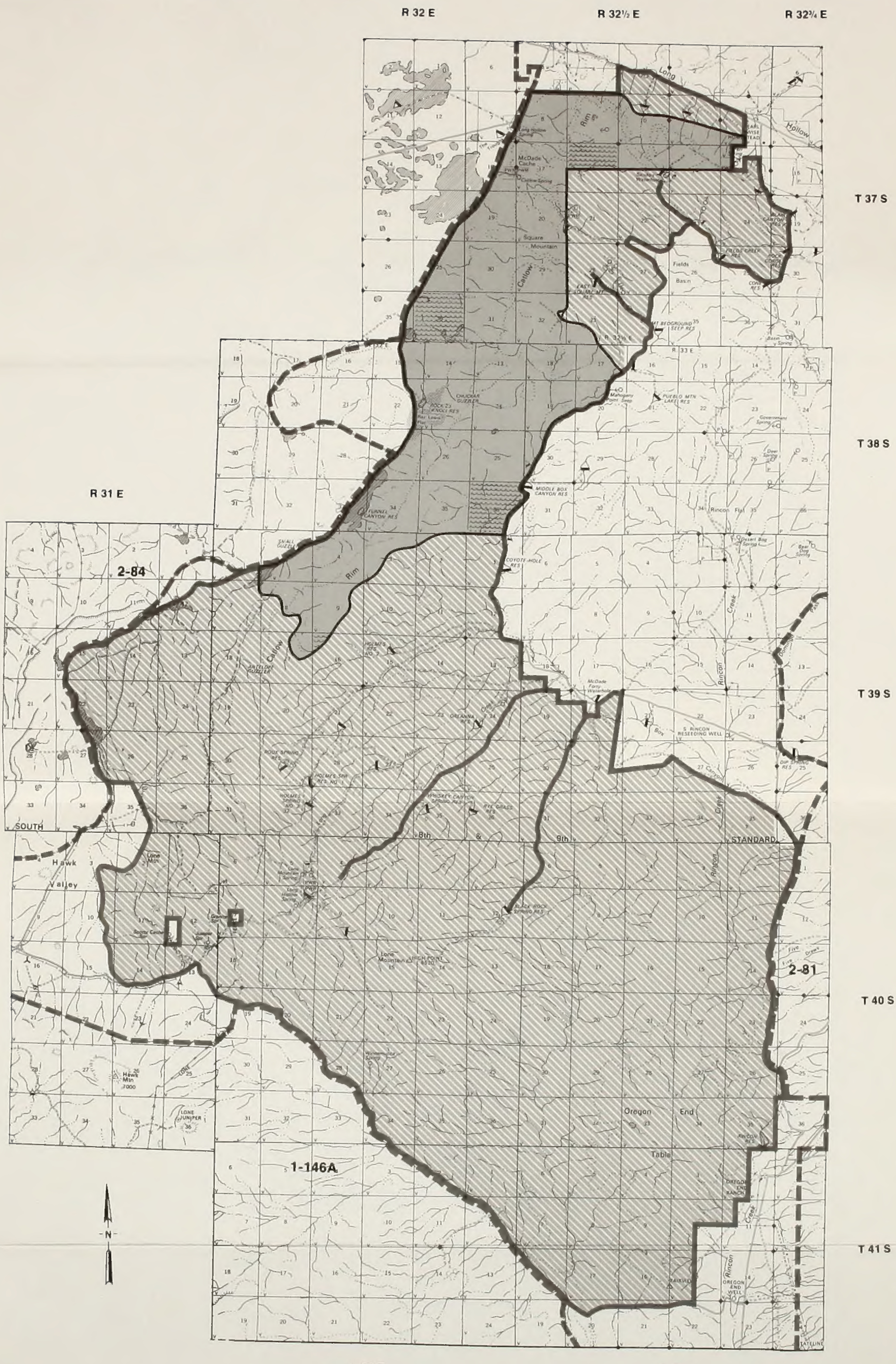
Rincon WSA
OR-2-82

ENHANCED ALTERNATIVE

1 0 1 2 MILES

— Wilderness Study Area Boundary
- - Boundary of Adjacent Wilderness Study Areas
▢ Recommended Suitable for Wilderness
▨ Non-Federal Land within Recommended Wilderness
▤ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness
✕ Recommended Road Closure

MAP 3



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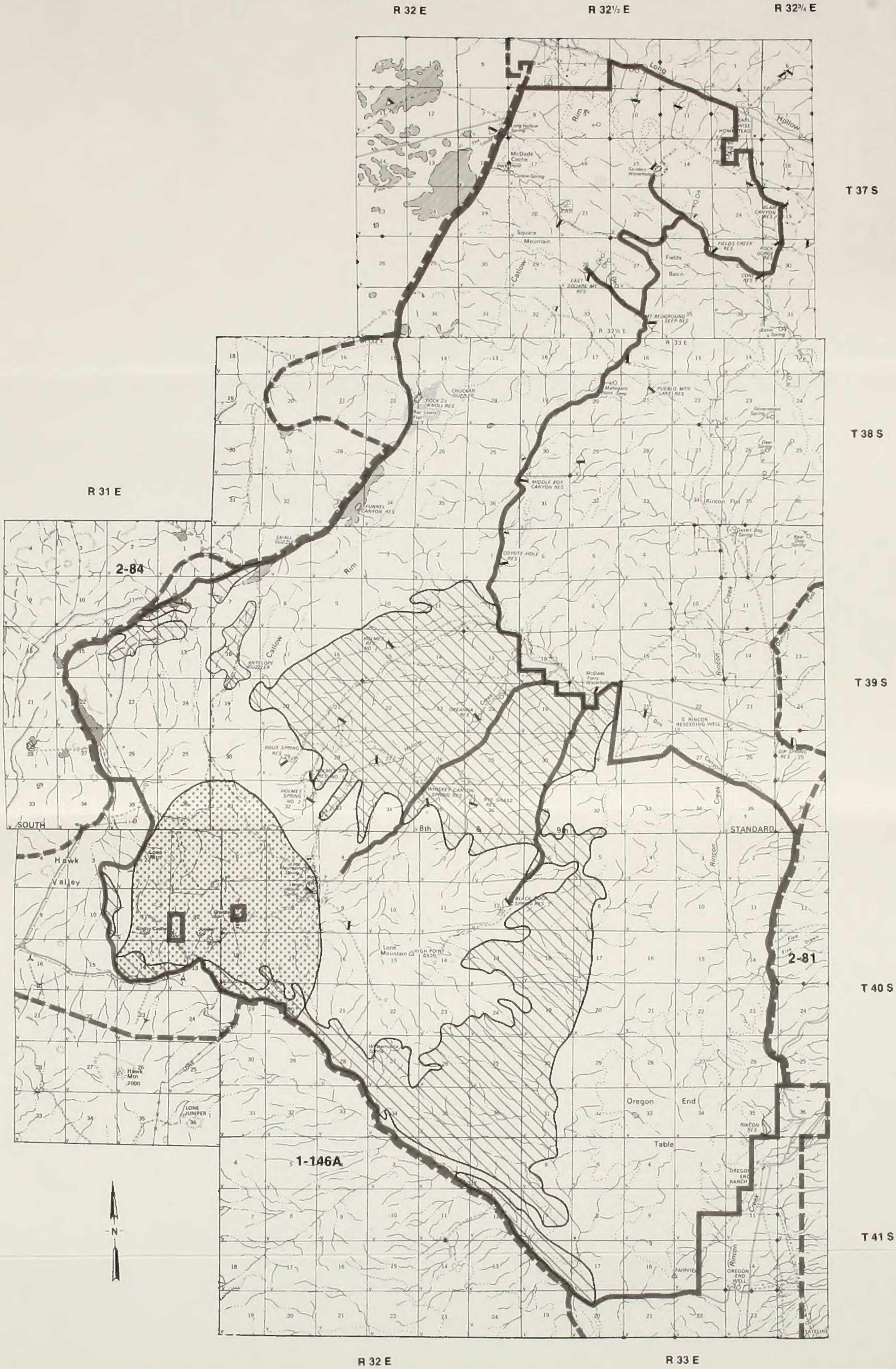
PROPOSED ACTION

1 0 1 2 MILES

- ▬ Wilderness Study Area Boundary
- ▬ ▬ Boundary of Adjacent Wilderness Study Areas
- ▢ Recommended Suitable for Wilderness
- ▨ Recommended Non-suitable for Wilderness
- ▦ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness

MAP 4



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MODERATE OR HIGH POTENTIAL MINERAL OR ENERGY RESOURCES

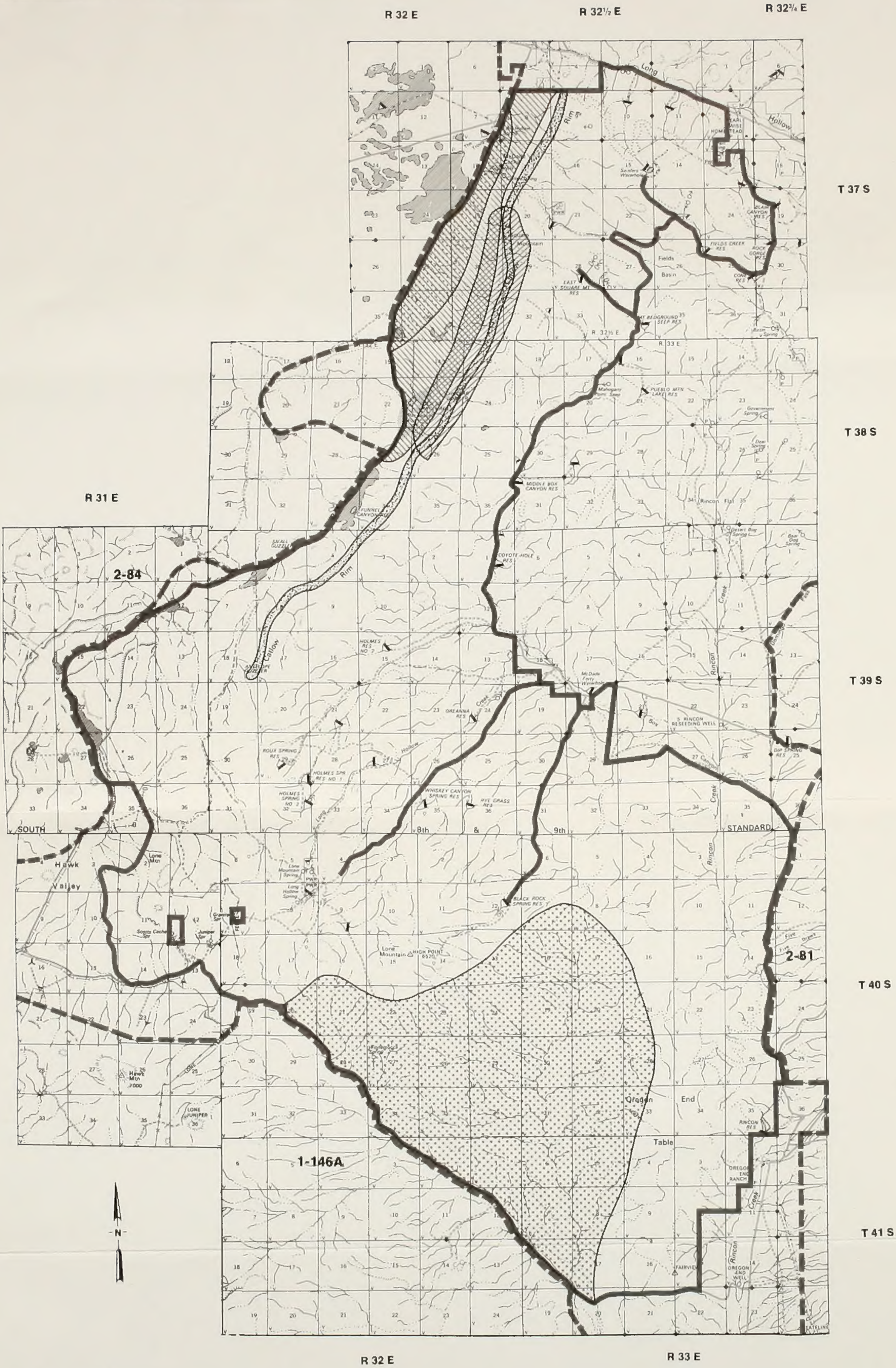
1 0 1 2 MILES

▨ **Moderate Potential (MA) for Diatomite**

▒ **Moderate Potential (MB) for Copper, Mercury and Gold**

Moderate Potential (MA) for Copper, Mercury and Gold in Rest of Area

MAP 5



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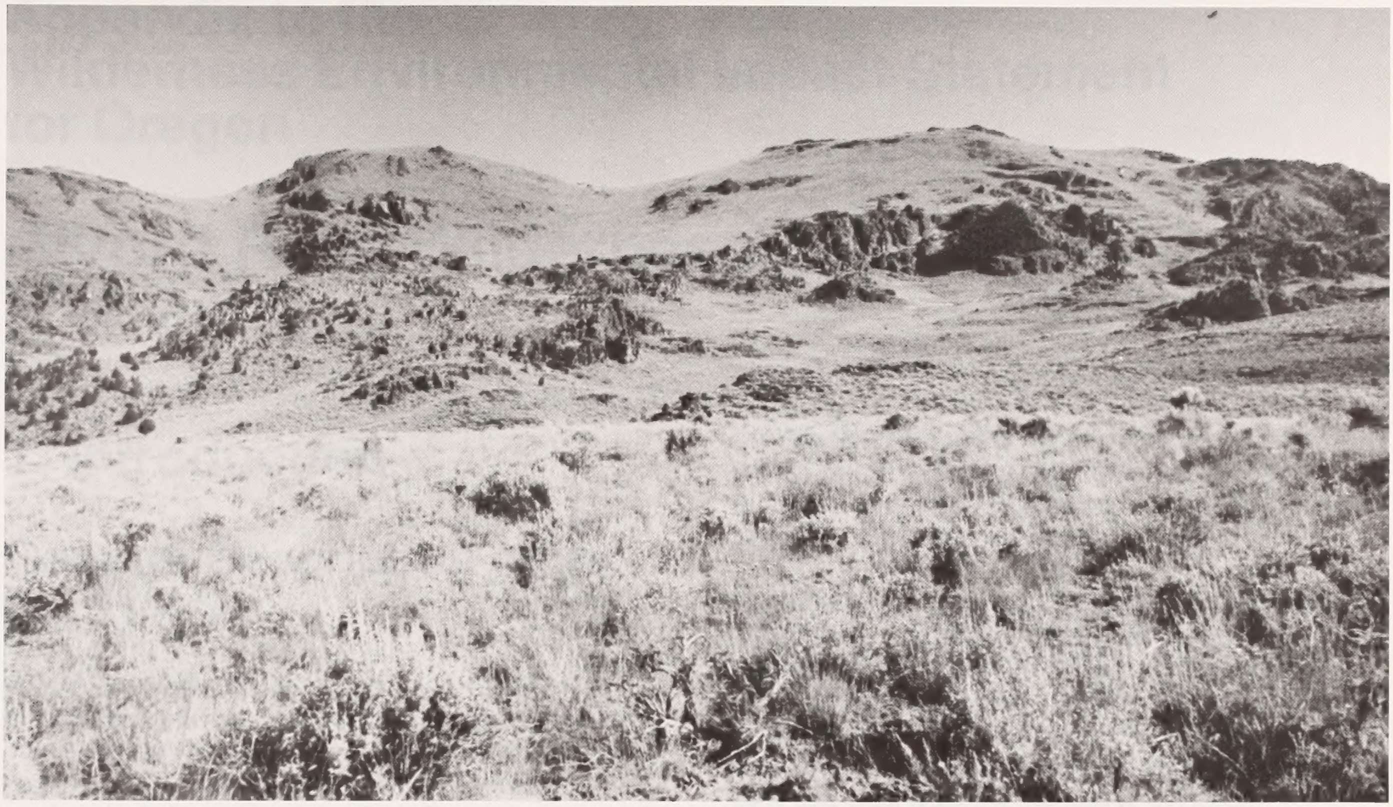
SPECIAL FEATURES

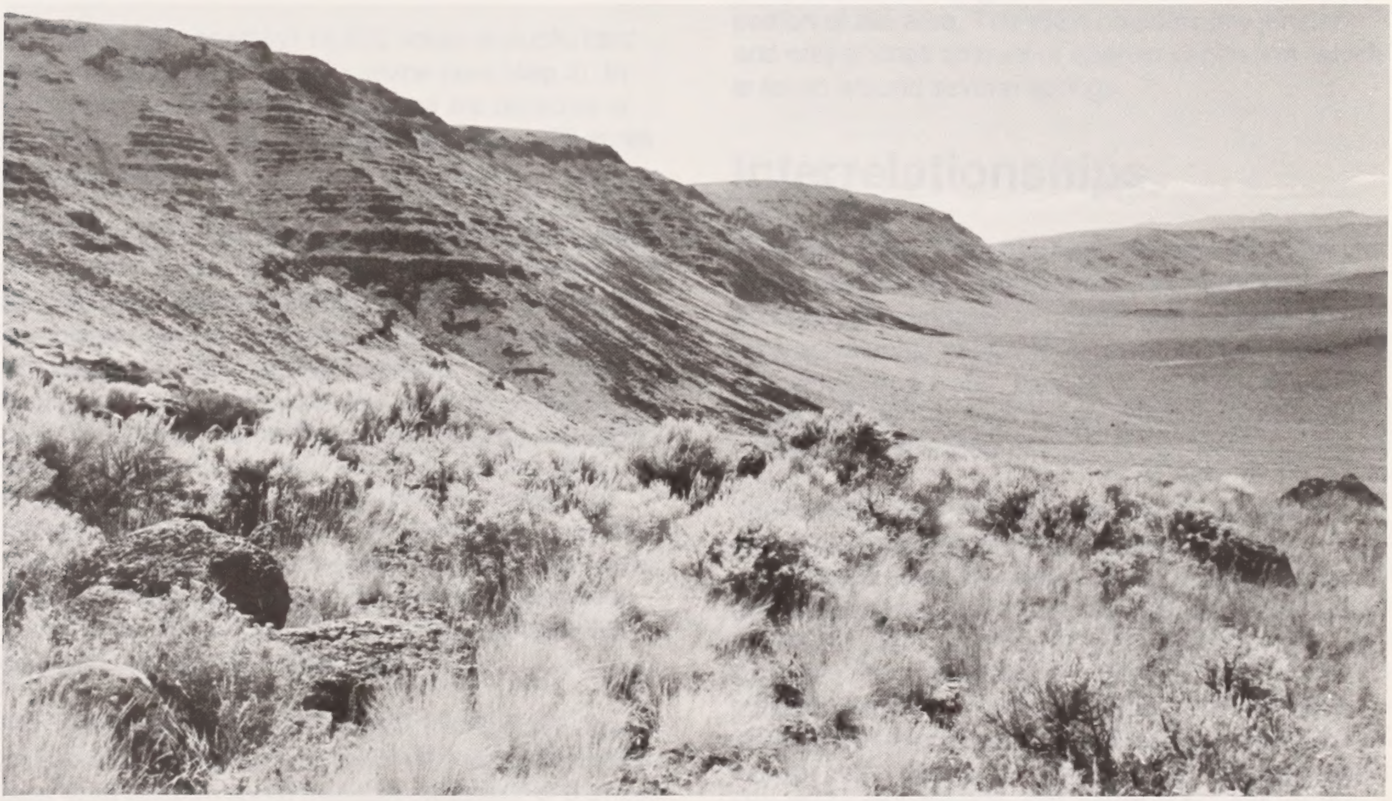
1 0 1 2 MILES

▨ Raptor Nesting Area
▨ Crucial Antelope Winter Range
▨ California Bighorn Sheep Range
▨ Crucial Deer Winter Range

MAP 6



Rincon WSA, OR-2-82. The southern side of Lone Mountain looking north. Lone Mountain is not suitable under the proposed action alternative but is suitable under the enhanced alternative. The photo shows rocky outcroppings in the Lone Mountain portion of the study area. A patch of juniper near Juniper Springs is visible on the left while Granite Springs, located on a 40-acre parcel of private land, is below a large rock outcropping to the right of center. The diversity of terrain enhances opportunities for solitude and recreation in this portion of the study area. August 1983.



Rincon WSA, OR-2-82. A view of Catlow Rim looking south on the northwest corner of the study area. The rim is recommended suitable under the enhanced and proposed action alternatives. In this part of the study area the rim rises over 1,200 feet from the eastern perimeter of Catlow Valley to the right. Easily visible from this area are many of the individual basalt flows (visible as small ledges on the upper part of the rim) which form the plateau. August 1983.

Appendix to the Wilderness Environmental Impact Statement for Oregon

Alvord Peak Wilderness Study Area (OR-2-83)

1. Introduction

General Description of the Study Area

The Alvord Peak Wilderness Study Area (WSA) is located about 82 miles south of Burns and approximately 4 miles north of Fields, in Harney County (see Map 1). It lies adjacent to the Long Hollow county road and within a mile of the Folly Farm-Fields county road. The nearest highways are Oregon State Highways 205 and 78, 31 miles west and 56 miles north, respectively.

The study area contains 16,825 acres of public land and is roughly rectangular in shape (see Map 2). In the central portion of the study area are 80 acres of privately-owned land. The WSA contains 1,125 acres of split-estate land.

The boundary of the area is somewhat irregular and is formed by a variety of features. The eastern section of the boundary line is formed by two roads (one in combination with a powerline), the edge of a crested wheatgrass seeding and private land. The southern section of the boundary line is formed by a road and a powerline, while the northern boundary line is a road and private land. Part of the western section of the boundary line follows legal subdivisions created by private land and public lands which contain a concentration of human developments. Four dead-end roads, totaling 4 miles, form part of the boundary; one road entering the WSA from the northwest, two from the east and one from the southeast.

The dominant topographic feature in this study area is a ridgeline containing a series of 10 peaks. The ridge runs from north to south through the center of the WSA and is the southern-most extension of the main ridge of Steens Mountain. The peaks along the ridge range in elevation from 6,189 feet to 7,132 feet, with the highest point in the WSA being Alvord Peak. From the ridgeline, the terrain slopes sharply east into Alvord Basin, falling an average of 1,600 feet in about 0.75 mile. The lowest elevation of 4,200 feet occurs along the eastern side of the study area.

To the west of the peaks, the terrain slopes more gently toward a plateau area which is typical of the western side of Steens Mountain. This part of the WSA contains rolling hills and some relatively flat land. There are 2 miles of perennial streams in the WSA and numerous intermittent drainages that run east and west from the summit of the ridge.

The study area contains a variety of grasses but the most common form of vegetation is big sagebrush. A small area of low sagebrush occurs in the southwest portion of the area. The WSA contains few juniper and only a small amount of riparian vegetation, which is found around several springs.

Interrelationships

The entire study area has been designated as an Area of Critical Environmental Concern (ACEC). The ACEC was designated to protect and enhance this area as valuable habitat for bighorn sheep. The upper elevations have water, escape cover and isolation which combine to provide excellent summer habitat for bighorns (see Map 2).

The management objectives for the ACEC do not prohibit mineral exploration and development or the use of the area by livestock. Under the proposed action, the integrity of the bighorn sheep habitat may be altered given projected mineral development scenarios. Surface-disturbing activities will be controlled to minimize impacts to habitat and the visual qualities of the area. Although a management plan has not been developed for the ACEC, management objectives and direction will continue to apply to the WSA irrespective of wilderness status.

The WSA is located within Oregon Department of Fish and Wildlife's (ODFW) Steens Mountain Wildlife Management Unit which contains 1,916 square-miles of land. The WSA supports a summer population of an estimated 50 deer, 30 antelope and 50 California bighorn sheep, and a winter population of 25 deer and 15 antelope. The Alvord Peak bighorn sheep herd is one of 13 bighorn herds in Oregon and the only herd that is migratory. ODFW has not set management objectives for antelope, but has an objective of 10,000 deer for the Steens Mountain Wildlife Management Unit and 100 California bighorn sheep for the Alvord Peak area. The proposed increase in bighorn sheep from 50 to 100 is through a natural population increase. The goal for nongame wildlife is to maintain populations of naturally occurring species at self-sustaining levels. The proposed action for this WSA conforms with ODFW's management objectives for deer and antelope, but would be inconsistent with ODFW's management objectives for bighorn sheep and some nongame wildlife.

ODFW maintains two wildlife guzzlers (wildlife watering devices) in the WSA. BLM maintains the Burke Springs riparian exclosure within the WSA. ODFW conducts aerial monitoring of summering bighorn sheep and wintering mule deer within the WSA.

The management objectives for this herd area, which provide for protection and enhancement of bighorn habitat under ACEC designation, were developed in conjunction with ODFW as reflected in the Burns District Bighorn Habitat Management Plan and the Andrews Land Use Plan.

Harney County has not identified any conflicts between the proposed action and County plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study and EIS planning, scoping and public review process. These issues concern both the effects of wilderness designation on existing and potential land uses or resources in the WSA, as well as the effects of existing and potential land uses or resources on wilderness values. Land uses or resources raised as issues specifically for this WSA include:

- impact on the area's wilderness values, including outstanding opportunities for solitude and primitive and unconfined recreation, and special features including geologic, wildlife, vegetative and scenic features;
- impact on projected mineral exploration and development;
- impact on bighorn sheep, deer, antelope and nongame wildlife, as well as crucial deer winter range;
- impact on livestock grazing use levels and management; and
- impact on recreation use levels.

No other issues specific to this WSA were raised by BLM or the public.

2. Description of the Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made.

A 0.5 mile section of road that forms part of the southern boundary is a high standard gravel road. The remaining roads which form sections of the boundary line (see General Description section) and the four dead-end roads that enter the WSA are all low standard dirt roads.

The following alternatives are analyzed:

- all wilderness
- enhanced wilderness
- no wilderness/no action (proposed action)

A partial alternative is not analyzed because there are no opportunities to eliminate resource conflicts by reducing the size of the area recommended suitable and still maintain an area which has wilderness characteristics.

All Wilderness

The all wilderness alternative would recommend all 16,825 acres of the Alvord Peak WSA suitable for wilderness (see Map 2). For purposes of analysis, it is assumed that private lands and the mineral estate of split-estate lands would not be acquired. The dead-end roads which enter the study area would remain open.

Energy and Mineral Development Actions

Wilderness designation would withdraw 15,700 acres of public land within the WSA from all forms of appropriation under the mining and mineral leasing laws. There are 16 mining claims in the WSA and a total of 1,205 acres (mineral estate of split-estate and private lands) that would be open to mineral exploration and development. Direct and indirect evidence indicate a high potential for the occurrence of mercury, gold and copper in the WSA. However, since there are no known ore bodies or deposits of these commodities, it is postulated that only casual exploration for mineral resources would occur on the claims, split-estate land and private lands under this alternative.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. No new wildlife developments are projected. Access for annual maintenance of one existing guzzler and the exclosure at Burke Springs would be on foot. The other existing guzzler would be abandoned in the absence of vehicular access for maintenance.

Livestock Management Actions

Based on preliminary studies, a reduction in livestock grazing use of 662 AUMs is projected, depending on the results of monitoring. This reduction would result in a total livestock grazing use of 1,774 AUMs in the WSA. In the absence of new range projects designed to increase available forage, a reduction would be necessary to offset a shortage in available forage in the Andrews allotment, which would be reduced from 1,059 AUMs to 397 AUMs. Livestock grazing use of 1,377 AUMs in the South Steens allotment would remain unchanged. The season of use would remain from April 16 to October 31.

Vehicle use for livestock management on 3 miles of ways would be precluded. Management of livestock and maintenance of 2 miles of fence, three springs, seven reservoirs and 0.75 miles of pipeline would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years for reservoirs and springs and every 5 years for the pipeline.

Recreation Management Actions

The entire 16,825 acres (excluding 4 miles of dead-end roads) would be closed to motorized vehicle use. Presently, vehicle use is limited by off-highway vehicle designation to the 4 miles of existing dead-end roads and 3 miles of existing ways. Current recreational use is estimated to be 100 visitor days per year. Most of this current use utilizes vehicles for access into the area via existing roads and ways.

Enhanced Wilderness

The enhanced wilderness alternative would recommend all 16,825 acres of public land in the WSA suitable for wilderness designation (see Map 3). Also, an attempt would be made to acquire the 80 acres of private land and the mineral estate of 1,125 acres of split-estate land through purchase or exchange with willing owners. Assuming acquisition of private lands, the total area recommended suitable under this alternative would be 16,905 acres.

The four dead-end roads, totaling 4 miles in length, which enter the area and 3 miles of ways would be closed.

Energy and Mineral Development Actions

Wilderness designation would withdraw 15,700 acres of public land within the WSA from all forms of appropriation under the mining and mineral leasing laws. If acquisition is successful, 1,205 acres of split-estate and private lands would also be closed to mineral entry for a total of 16,905 acres. Projected exploration and development for gold and exploration for geothermal resources, mercury, and copper would be prohibited. Due to the lack of a confirmed, developable mineral deposit, development of the 16 existing mining claims is not anticipated under this alternative.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. No new wildlife developments are projected. Access for annual maintenance of one existing guzzler and the Burke Springs exclosure is on foot. The other existing guzzler would be abandoned in the absence of vehicular access for maintenance.

Livestock Management Actions

Based on preliminary studies, a reduction in livestock grazing use of 662 AUMs is projected, depending on the results of monitoring. This reduction would result in a total livestock grazing use of 1,774 AUMs in the WSA. In the absence of new range projects designed to increase available forage, a reduction would be necessary to offset a shortage in available forage in the Andrews allotment, which would be reduced from 1,059 AUMs to 397 AUMs. Livestock grazing use of 1,377 AUMs in the South Steens allotment would remain unchanged. The season of use would remain from April 15 to October 31.

Vehicle use for livestock management on 3 miles of ways and 4 miles of dead-end roads would be precluded. Management of livestock and maintenance of 2 miles of fence, three springs, seven reservoirs and 0.75 miles of pipeline would be conducted on horseback. Mechanized heavy equipment would be used on the average of once every 10 years for reservoirs and springs and every 5 years for pipelines.

Recreation Management Actions

Assuming acquisition of the private inholding, the entire 16,905 acres would be closed to vehicle use, involving 4 miles of roads and 3 miles of ways. Presently, vehicle use is limited by off-highway vehicle designation to the 4 miles of dead-end roads and 3 miles of ways. Current recreational use is estimated to be 100 visitor days per year. Most of the current recreation use utilizes vehicles for access into the area via existing roads and maps.

No Wilderness/No Action (Proposed Action)

The no wilderness/no action alternative would recommend the entire WSA nonsuitable as wilderness. It represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

All of the 16,825 acres in the WSA would be open to mineral and energy exploration and development. Based on field samples and inventories, abundant direct and indirect evidence support a high potential for the occurrence of mercury, gold and copper throughout the entire WSA.

Although there is a high potential for the occurrence of geothermal resources along the eastern edge of the WSA, no geothermal exploration and development is projected. The area is located on the western edge of a major geothermal field and any development is expected to take place to the east in the more accessible Alvord Valley.

It is projected that exploration for gold would occur at 30 locations, involving 75 drill holes. This exploration and related access would temporarily disturb 20 acres. It is postulated that this exploration would result in the location of an ore body of sufficient size and potential economic benefit for development. The resulting open-pit gold mine and mill site would disturb 150 acres over a 15-year period. New haul roads and power lines 4 miles in length would disturb an additional 16 acres. The location of the mine would be in the southeastern portion of the WSA.

Exploration for mercury could occur at five locations, involving 10 drill holes, and would temporarily disturb 3 acres. It is postulated that an ore body of sufficient size and economic potential would not be located; therefore, no development of the mercury resource is anticipated in the foreseeable future.

Wildlife Habitat Management Actions

Habitat would be managed within BLM's authorities, to support existing wildlife populations in accordance with ODFW management goals. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. No new wildlife developments are projected. Access for annual maintenance of the two existing wildlife guzzlers would continue by vehicle. Access for annual maintenance of the exclosure at Burke Springs would continue on foot.

Livestock Management Actions

Livestock use would remain at the current level of approximately 2,436 AUMs in the portions of the two allotments within the WSA. The season of use would continue to be from April 15 to October 31.

Two springs would be developed with headbox, pipeline, troughs and exclosures to protect the water source and overflow from livestock. Two reservoirs would be constructed to obtain better livestock distribution.

Vehicle use for livestock management and maintenance of the 2 miles of fence, five springs, nine reservoirs and 0.75 miles of pipeline would continue on the existing 3 miles of ways and 4 miles of dead-end roads. Mechanized heavy equipment would be used for maintenance on the average of once every 10 years for reservoirs and springs and every 5 years for the pipeline.

Recreation Management Actions

Vehicle use would continue to be restricted by an OHV designation to the existing 4 miles of dead-end roads and 3 miles of ways, as well as the 4 miles of roads that would be developed in conjunction with projected mining activities. Current recreational use is estimated to be 100 visitor days per year. Most of this recreation use utilizes vehicle access into the area via existing roads and ways.

Summary

Table 1 summarizes the projected management actions under each alternative.

Table 2 summarizes the environmental consequences of each alternative.

3. Affected Environment

This section discusses only those activities or resources which influence the character of the study area, or that may be affected by the alternatives.

Wilderness Values

Naturalness

The Alvord Peak WSA is in a relatively natural condition. Developments influence only about 6 percent of the WSA (the area of influence is an estimate of the acreage within the WSA from which each development can be seen). Most of the unnatural features occur at or near a boundary, leaving the interior free of developments. The WSA contains 26 developments: seven reservoirs, three developed springs, a 0.75-mile pipeline, two guzzlers, six short ways totaling 3 miles, three fences totaling 2 miles, two locations with buildings and an area of past mining activity. These features are small and most of them are screened by topography. In addition, they are not concentrated in any one portion of the area.

The vehicle ways are overgrown and lie in drainages where they are screened by topography. Five of the reservoirs in the study area also lie within drainages. Two reservoirs and a guzzler are located in open areas and are more easily seen than the majority of developments. There are two locations on the east side of the WSA that contain structures. Both occur within areas not easily seen from a distance, but which are quite visible from the immediate vicinity of the development. These structures are associated with past mining activity.

Outside sights and sounds do not affect the overall quality of naturalness for the average visitor. The developments within sight and sound of the WSA include two county roads, a crested wheatgrass seeding, two powerlines and Skull Creek Reservoir. Although these developments are visible from various points within the study area they are not substantial enough to detract from the natural appearance of the WSA.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

Outstanding opportunities for solitude are available in the Alvord Peak WSA, primarily because of topographic screening provided by the ridgeline, the peaks, the rock outcroppings and numerous drainages and hills located in the western three-quarters of the area. The eastern quarter of the WSA has large, flat areas and some rolling hills. The eastern section of the study area is less conducive to solitude, as it provides fewer secluded spots. The study area contains no vegetative screening which would enhance the opportunities for solitude.

Opportunities for primitive and unconfined recreation are also outstanding within the WSA. Day hiking, chukar hunting, wildlife observation, sightseeing, and photography are the primary activities available in the Alvord Peak area. The area's rugged topography provides a challenge for the hiker. In addition, the presence of a herd of bighorn sheep, the sharp contrast of brightly colored lichens on dark basalt rock, and the broad scenic vistas from the summit of the ridgeline not only add to the hiking experience, but provide opportunities for the photographer and sightseer as well.

Opportunities for backpacking and horseback riding are also available within the area but are somewhat limited due to the relatively small size of the WSA.

Hunting opportunities are excellent for chukars on the lower eastern slopes of the area. Although deer, bighorn sheep and antelope are present in the WSA, their numbers are limited and the hunting opportunities are fair.

Special Features

Special features include the geologic, wildlife, vegetative and scenic features which add to the value of the study area as wilderness.

The Steens Mountain fault block is divided into three topographic units known as Northern Steens, High Steens and Southern Steens. The Alvord Peak WSA is located at the southern end of the Southern Steens unit and is characterized by rugged, irregular terrain.

Features of geologic interest include Sharp Peak near the northern end of the study area and Alvord Peak, about 3 miles to the south of Sharp Peak. These peaks were formed by lava flows of a different nature than that of the surrounding formation. They are composed of rhyolitic and dacitic lavas, which are highly viscous and commonly form volcanic domes.

Along the eastern foothills of the Southern Steens, two other notable features can be seen. Basalt dikes have formed narrow ridges which generally run parallel to the range. Mineralized fracture zones also form ridges or "reefs" along the foothills. Both the dikes and the mineralized "reefs" are more resistant to erosion than the surrounding rocks and stand out as notable features.

Wildlife values are a special feature of this study area because the high peaks in the central portion of the WSA provide excellent summer range for a herd of bighorn sheep. This herd of sheep is one of only four herds on BLM lands in the Burns District.

Sage grouse use the gentle western slopes of the WSA and are now a candidate species for Federal listing as Threatened or Endangered.

Another wildlife feature of significance within the Alvord Peak study area is a small amount of crucial deer winter range. The winter range is located in the lower foothills along the northeastern side of the WSA (see Map 2).

A plant species of special interest, *Phacelia gymnoclada,* occurs in the southeastern portion of the WSA (see the Vegetation section for more information).

The scenery of Alvord Peak area is a special wilderness feature because the eastern side has outstanding scenic qualities. The scenic portion of the area includes all of the eastern face of the ridgeline, as well as excellent views of the Upper Steens, Pueblo and Trout Creek Mountains and the Alvord Basin to the east.

Diversity in the National Wilderness Preservation System (NWPS)

According to the Bailey-Kuchler system of classifying ecosystems, the WSA is in the Intermountain Sagebrush Province and the potential natural vegetation is saltbush-greasewood and sagebrush-steppe communities.

Plant communities identified in the Basin and Range section of the Oregon Natural Heritage Plan, which occur in the WSA, are big sagebrush/Idaho fescue, big sagebrush/bitterbrush/Idaho fescue, low sagebrush/Idaho fescue and big sagebrush/bluebunch wheatgrass.

The study area is within five hours' driving time of one standard metropolitan statistical area with a population over 100,000: Boise, Idaho.

Energy and Mineral Development

The geology, energy and mineral resources of the Alvord Peak WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, correlating rock units in the WSA with similar environments in areas known to contain mineral resources and by evaluating a geochemical sampling program conducted by BLM. Technical details of the evaluation are in a mineral resources assessment report, "Pueblo Valley Geologic Resources Area (GRA OR-020-21), Harney County, Oregon," prepared by TERRADATA (a consulting firm under contract with BLM) and in a BLM report on the Fields geologic resource areas.

The WSA is within the Pueblo Valley geologic resource area which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level). A description of the rating system is provided in the Statewide EIS volume.

Surface rocks in the WSA are Tertiary volcanic rocks consisting mainly of massive basalt flows, minor interbedded tuffs and tuffaceous sedimentary rocks, and Quaternary sedimentary rocks including unconsolidated sand, silt and gravel deposits.

A small portion (less than 360 acres) of the Alvord Peak WSA falls within the Alvord Known Geothermal Resource Area (KGRA), a Federally defined area with specific boundaries within which geothermal resources are known to exist.

Table 3 shows the energy and mineral classifications in the study area. Map 4 shows where energy and mineral resources have moderate or high potential for occurrence in the WSA.

Energy Resources

The southeast edge of the WSA is rated as having a high potential for the occurrence of geothermal resources and lies within the Alvord KGRA. The main area of the geothermal field lies to the east in Alvord Valley. Major hot springs and faults, high geothermal gradients in test holes and favorable geophysical information make the Alvord Valley a prime geothermal prospect. Although the area has had oil and gas and geothermal leases in the past, it contains no energy leases at this time.

Mineral Resources

The entire WSA is rated as having a high potential for the occurrence of mercury, gold and copper. The geologic environment, inferred geologic processes, and occurrences of mercury, copper and gold provide direct evidence to support this rating. Mercury and copper are strategic and critical minerals. Although mercury, gold and copper have a high mineral potential rating within the WSA, there are no known deposits. As of October 16, 1987, the area had 16 mining claims lying partially or wholly within the WSA.

Vegetation

The major plant communities are big sagebrush/bunchgrass, low sagebrush/bunchgrass and a big sagebrush/low sagebrush complex.

The big sagebrush/bunchgrass community occurs extensively on the low to mid-elevation foothills in the eastern and southern portions of the WSA. Squirreltail, Sandberg's bluegrass and cheatgrass are common to the flat to gently-sloping areas, while bluebunch wheatgrass or Idaho fescue form the bulk of the grass cover on the steeper slopes. Bitterbrush occurs sporadically throughout this community on eroded south slopes. The big sagebrush/bunchgrass community is estimated to be generally in mid-seral stage. The potential natural community is bluebunch wheatgrass and big sagebrush.

On the higher slopes and the tops of the ridges, the low sagebrush community dominates. The estimated successional stage is mid-seral. The probable potential natural species include Idaho fescue and low sagebrush with Sandberg's bluegrass replacing Idaho fescue on the more harsh sites.

The third community is a complex where big sagebrush and low sagebrush are intermittently the dominant species with Idaho fescue, bluebunch wheatgrass and bitterbrush occurring in small amounts. The community occurs primarily in the western portion of the WSA. The estimated successional stage of this community complex is mid-seral. Species expected at the communities' potential include big sagebrush, low sagebrush, bluebunch wheatgrass, Idaho fescue and Sandberg's bluegrass.

One species of special interest has been identified in this area: *Phacelia gymnoclada* (thick-leaved phacelia), which is "threatened in Oregon but more common or stable elsewhere" according to the Oregon Natural Heritage Data Base (1987). The plant occurs in the southeastern corner of the WSA, on the eastern slope of the major ridge.

A narrow band of riparian vegetation occurs in conjunction with the 2 miles of perennial streams located within the WSA. The riparian species consist of willow, dogwood and chokecherry. Potential natural vegetation species are not clearly known, but probably include the species previously mentioned as well as forbs and grasses.

The WSA's vegetative composition and ecological status, which is currently in the mid-seral stage overall, would continue to decline on the average and more particularly in the areas subject to heavy or severe livestock use. Utilization of key forage species would remain at the current level of 30 percent.

Wildlife

The WSA provides habitat for species using the steep rimrock and talus found along the east side of Steens Mountain. Big sagebrush and low sagebrush are habitat types for many of the wildlife species in the WSA.

Much of the area is excellent chukar habitat with good interspersion of water, forage, talus and rimrock. Valley quail are found along drainages and uplands along the east side of the area. Sage grouse use the gentle western slopes and are now listed as a candidate for Federal listing as Threatened or Endangered.

Golden eagle, prairie falcon, American kestrel, great horned owl, burrowing owl and common raven use the area.

Mule deer and antelope make light use of the area yearlong. There is a small area of crucial deer winter range in the lower foothills along the northeastern side of the WSA. Up to 50 California bighorn sheep range over the steeper slopes during the summer. They winter outside of the WSA.

Nongame wildlife species using the low sagebrush and big sagebrush habitat types include Brewer's sparrow, sage sparrow, western meadowlark, sage thrasher, black-tailed jackrabbit and least chipmunk. Rimrocks and talus provide habitat for such species as yellow-bellied marmot, bushy-tailed wood rat, canyon mouse, long-eared myotis (bat) and small-footed myotis.

The study area contains two wildlife guzzlers which require maintenance once each year and are accessed by vehicles. One 20-acre exclosure at Burke Springs protects a 17-acre riparian area from livestock grazing and is accessed for annual maintenance by foot.

Watershed

The WSA contains approximately 2 miles of perennial streams, which include Burke Springs Creek, Schouver Creek and Dipping Vat Spring. The headwaters of all three streams have serious headcutting problems, with cuts as deep as 12 feet. About 0.2 miles of Burke Springs Creek has been fenced and is presently recovering. Water quality is good except when livestock frequent the stream bottoms and increase fecal coliform and turbidity.

Livestock Grazing

Portions of two grazing allotments (Andrews and South Steens) are within the Alvord Peak WSA. Currently, all public lands in the WSA are permitted for livestock grazing. Current estimated livestock use is 2,436 AUMs, and the season of use is from April 15 to October 31.

Existing range improvements in the WSA are 7 reservoirs, 3 spring developments, 0.75-mile pipeline and 2 miles of fence.

Two livestock operators use motor vehicles on ways approximately 10 times per year for fence, spring and reservoir inspection and maintenance, to check on livestock and to spread salt.

Based on preliminary studies, there is a 332 AUM shortage of livestock forage associated with the Andrews allotment portion of the WSA. The present level of livestock use would cause a downward trend in forage production and ultimately a downward trend in ecological status.

Recreation Use

Hunting, mainly for chukar and quail, is the primary recreational activity in the WSA. Most of this use takes place on the lower foothills of the eastern side of the area. Hunters use vehicles on the perimeter roads, dead-end roads and ways. Vehicle use other than on the roads and ways is limited by topography and off-highway vehicle designation.

Recreational use for other activities, such as photography, birding, viewing bighorn sheep, and other primitive forms of recreation, is light. Total use is estimated to be 100 visitor days per year and is increasing by less than 2 percent per year.

Local Personal Income

Livestock use at the current level of 2,436 AUMs and recreation use totaling 100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $29,232 for livestock grazing and $1,200 related to recreation use of the WSA, for an overall total of $30,432. The Statewide EIS volume discusses the term local personal income and how income figures have been derived.

4. Environmental Consequences

Introduction

This section discusses the environmental consequences of implementing each of the alternatives. Resources and activities not significantly affected by any of the alternatives are not discussed. The statewide volume discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness: 16,825 acres
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

All of the WSA would be designated wilderness, and wilderness values within the entire 16,825 acres would be protected by legislative mandate. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. Special features, including scenic values associated with Alvord Peak and Sharp Peak, the lava dikes in the eastern foothills, bighorn sheep habitat, a plant species of special interest, crucial deer winter range and sage grouse would be protected.

Naturalness

The naturalness of the area's contrasting basalt formations and the broad scenic vistas from the ridgeline summit would be slightly enhanced by the closure of 3 miles of ways, allowing the ways to naturally revegetate and return to an unbroken sagebrush and grass landscape.

Spring, reservoir and pipeline maintenance would require heavy equipment access on 3 miles of ways approximately once every 5 to 10 years for each development. This infrequent amount of use would not prevent the ways from revegetating.

Solitude

Opportunities for solitude provided by the ridgeline, peaks, dark basalt outcroppings and numerous drainages and hills would improve slightly with the closure of 3 miles of ways and reduced vehicle use.

Maintenance of the existing seven reservoirs and three springs would require the use of heavy equipment approximately once every 10 years for each facility, and once every 5 years for the 0.75 miles of pipeline. This maintenance activity would cause minor local impairment of solitude.

Primitive and Unconfined Recreation

Closure of 3 miles of ways to motorized vehicle use would increase the opportunities for participating in primitive and unconfined recreation activities such as day hiking, wildlife observation, sightseeing and photography within the study area. The quality of hunting would improve with the closure and natural revegetation of ways. A more natural, primitive and wild setting would be provided.

Special Features

Eliminating motorized vehicle use on the 3 miles of ways would reduce potential impacts to the area's special features. These impacts include impairment of scenic vistas and minor seasonal disturbance to wildlife that inhabit the study area.

Overall, the special features within the study area would be protected from projected mineral development because wilderness designation would close 15,700 acres of public land to mineral entry.

Conclusion: Wilderness designation of the entire 16,825 acres within the WSA would result in the protection of the existing wilderness values and probable enhancement of those values.

Impacts on Energy and Mineral Development

Wilderness designation would close 15,700 acres within the WSA to mineral entry. The 80-acre private parcel and the 1,125 acres of split-estate lands would be open to mineral entry and development.

Energy Development

Energy exploration and development would be precluded on 15,700 acres within the WSA. Although there is a high potential for the occurrence of geothermal resources along the eastern edge of the WSA, no geothermal exploration and development activity is projected since the main potential geothermal field immediately east of the WSA is more easily accessible and, therefore, developable.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for gold, copper and mercury would be precluded on 15,700 acres. Exploration could occur on the 1,125 acres of split-estate land and the 80-acre private inholding. One gold mine is projected in the southeastern portion of the WSA due to the high mineral potentials, the confidence level of that mineral potential and the economic value of the resource; however, wilderness designation would close these lands to mineral entry.

Conclusion: Production would be foregone from one projected open-pit gold mine.

Impacts on Vegetation

The WSAs vegetative composition and the ecological status, which is currently in the mid-seral stage overall, would continue to decline on the average and more particularly in areas subject to severe or heavy livestock use. Although a reduction in AUMs is projected, the absence of new range projects would not alter the current grazing patterns, and grazing pressure would continue in the same areas which are currently subject to severe or heavy use. Utilization of key forage species would remain at the current level of 30 percent.

The 3 miles of ways, once closed to vehicle use, would naturally revegetate within approximately two growing seasons with annual forbs and grasses.

Conclusion: The 3 miles of ways (totaling 3 acres) would eventually revegetate. Overall vegetation would continue to decline on the average.

Impacts on Wildlife

Wildlife habitat for a summer population of 50 deer, 30 antelope and 100 bighorn sheep, and for a winter population of 25 deer and 15 antelope, would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives.

Access to maintain the two guzzlers in the WSA would have to be on foot or horseback. This would not be a problem for maintaining the one guzzler near the county road, but it would be a problem for maintaining the other guzzler, which lies more than one mile from the nearest open road. When substantial repairs became necessary, this guzzler would probably be abandoned. This would reduce water availability and habitat for chukars and some small animal populations dependent on this water source. Populations of these small animals would decline slightly due to less water being available. Chukars would move to other water sources.

The closure of 3 miles of ways would have little impact on big game wildlife species due to the light vehicle use. Less disturbance to chukar and valley quail from hunters would occur due to the closure of ways.

Conclusion: Wildlife habitat and populations would be maintained on 16,825 acres designated wilderness. Small animal populations would decline where one guzzler site would be abandoned.

Impacts on Watershed

Since the proposed spring developments would not be constructed under this alternative, the watershed conditions at the head of Schouver Creek and Dipping Vat Springs would continue to decline. Livestock pressure would continue to occur in these sensitive areas. An exclosure proposal, without the spring development, would protect the areas with deep headcuts, but it would increase livestock concentration on the stream below the exclosure, possibly creating similar headcuts where none presently exist. Turbidity and fecal coliform would continue to be a problem in the unprotected portions of the perennial streams. There would be little change in the watershed over the rest of the WSA.

Conclusion: Current headcutting problems would continue to worsen and the water quality would remain poor on the 2 miles of perennial streams. There would be little change in the watershed over the rest of the WSA.

Impacts on Livestock Grazing

Construction of two spring developments and two reservoirs, designed to increase use of available forage to reduce grazing pressure on some of the more sensitive areas, would be precluded under this alternative due to recurring maintenance needs utilizing vehicles. Without these projects, there would be a projected reduction in livestock grazing use in the Andrews allotment of 662 AUMs. This reduction would result in a total livestock grazing use of 1,774 AUMs in the WSA. Livestock grazing use of 1,337 AUMs in the South Steens allotment would remain unchanged. The season of use would remain from April 16 to October 31.

Vehicle use for livestock management and facility inspection and maintenance on the 3 miles of ways would be precluded. This would result in some inconvenience and a slight additional expense to two livestock operators. Annual inspection and maintenance of fences not accessible by open roads would be done on foot or by the use of riding and pack animals. Heavy equipment may be used on the average of once every 10 years to maintain seven reservoirs and three spring developments and every 5 years to maintain 0.75 miles of pipeline.

Conclusion: Livestock use would be reduced by an estimated 662 AUMs. Vehicle use for routine livestock management on 3 miles of ways would be precluded.

Impacts on Recreation Use

Except for the 4 miles of dead-end roads that would remain open under the all wilderness alternative, the entire 16,825 acres of the WSA would be closed to motorized recreation use, including 3 miles of ways. This closure would reduce vehicle-oriented recreation use in the WSA.

Primitive recreation would be expected to increase slightly. Vehicle-oriented recreation is expected to be displaced into other areas or to be partially substituted by primitive recreation. Some vehicle-oriented recreationists, primarily hunters, may continue to use the WSA, traveling by foot or horseback. It is estimated that reductions in hunting use would be minor due to continued access opportunities on the 4 miles of dead-end roads.

Projected use patterns indicate that the current level of 100 visitor days per year would remain the same over time.

Conclusion: Recreation use would remain the same at the current level of 100 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would decrease by 662 AUMs. Overall recreation use would remain at 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $7,944 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $8,000.

Enhanced Wilderness

Recommended suitable for wilderness: 16,905 acres (assuming acquisition of 80 acres of private land)
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

The enhanced wilderness alternative would add 16,905 acres to the NWPS, with acquisition of the 80 acres of private land and the acquisition of the mineral estate of 1,125 acres of split-estate lands. The effects of this alternative would be nearly the same as the all wilderness alternative; however, acquisition of the private land and mineral estate would prevent potential disturbance from mineral exploration on these parcels. This would improve the wilderness qualities of the area. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. Special features, including scenic values associated with Alvord Peak and Sharp Peak, the lava dikes in the eastern foothills, bighorn sheep habitat, crucial deer winter range and sage grouse would be protected.

Closing the four dead-end roads and 3 miles of ways would eliminate vehicle use and allow these roads and ways to revegetate and become less noticeable. It would also enhance opportunities for solitude and primitive recreation by preventing vehicle intrusions.

Naturalness

The enhanced wilderness alternative would enhance the overall naturalness of the area slightly more than the all wilderness alternative by closing the 4 miles of dead-end roads which enter the WSA, as well as the 3 miles of ways. The existing roads and ways would be allowed to naturally revegetate and would become less visible within the study area, thus improving overall naturalness by providing an unbroken sagebrush and grass landscape.

Acquisition of 80 acres of private land and 1,125 acres of mineral estate within the study area would prevent potential disturbance from mineral entry and exploration and the need for access to these scattered parcels, thus preserving the naturalness of the area.

Solitude

This alternative would enhance the opportunities for solitude in a manner similar to the all wilderness alternative, except that solitude would be further enhanced by closure of the 4 miles of dead-end roads in the WSA and elimination of motorized vehicle use. Acquisition of 80 acres of private land and the mineral estate of 1,125 acres of split-estate land would preclude mineral entry and exploration and would increase opportunities for experiencing solitude.

Maintenance of existing livestock facilities would require use of heavy equipment approximately once every 10 years for the seven reservoirs and three springs and every 5 years for the 0.75 miles of pipeline.

Primitive and Unconfined Recreation

Under the enhanced wilderness alternative, opportunities for primitive recreation would be maintained or improved. Closure of the four dead-end roads and 3 miles of ways would essentially eliminate vehicle use within the WSA, resulting in a more primitive setting for wilderness recreational pursuits.

In addition, acquisition of the 1,125 acres of non-Federal mineral estate would prevent mineral entry and exploration and would further enhance and preserve a natural setting for primitive recreational activities.

Special Features

Eliminating motorized vehicle use on the 4 miles of dead-end roads, in addition to the 3 miles of ways, would reduce the potential for impacts to special features. These impacts include impairment of scenic vistas and minor seasonal disturbances to wildlife that inhabit the study area.

The special features of the area would be protected from projected mineral development because wilderness designation would close a total of 16,905 acres of public land, assuming acquisition of the 80-acre private parcel and 1,125 acres of split-estate lands.

Conclusion: Wilderness designation of the 16,905 acres (assuming acquisition of 80 acres of private land) would result in the protection of existing wilderness values and enhancement of those values. Acquisition of mineral estate would further enhance the total area by preserving wilderness values on all lands within the wilderness boundaries.

Impacts on Energy and Mineral Development

Under the enhanced wilderness alternative, 15,700 acres (plus an additional 1,205 acres of private land and mineral estate proposed for acquisition) would be withdrawn from mineral entry.

Energy Development

Energy exploration and development would be precluded on 16,905 acres, assuming acquisition of the 80-acre private inholding and the mineral estate of the 1,125 acres of split-estate lands. Although there is a high potential for the occurrence of geothermal resources along the eastern edge of the WSA, no geothermal exploration and development activity is projected since the main geothermal field immediately to the east of the WSA is more easily accessible and, therefore, developable.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for gold, mercury and copper would be precluded on 16,905 acres, assuming acquisition of the 80-acre private inholding and the mineral estate of the 1,125 acres of split-estate lands. One gold mine was projected in the southeast portion of the WSA due to the high mineral potential, the confidence level of that mineral potential and the economic value of the resource.

Conclusion: Production would be foregone from one projected open-pit gold mine.

Impacts on Vegetation

The WSAs vegetative composition and ecological status, which is currently in mid-seral stage overall, would continue to decline on the average and more particularly in areas subject to heavy or severe livestock use. Although a 662 AUM reduction is projected due to the absence of projected range developments, livestock pressure will continue in sensitive areas. Livestock utilization of key forage species would remain at the current use-level of 30 percent.

The 4 miles of dead-end roads and 3 miles of ways, once closed to vehicle use, would naturally revegetate within approximately two growing seasons with annual forbs and grasses.

Conclusion: The 3 miles of ways and 4 miles of roads (totaling 11 acres) would eventually revegetate. Overall vegetation condition would continue to decline on the average.

Impacts of Wildlife

Wildlife habitat for a summer population of 50 deer, 30 antelope and 100 bighorn sheep, and for a winter population of 25 deer and 15 antelope, would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans to meet ODFW management objectives.

Access to maintain the two guzzlers in the WSA would have to be on foot or horseback. This would not be a problem for maintaining the one guzzler near the county road, but it would be a problem for maintaining the other guzzler, which lies more than one mile from the nearest open road. When substantial repairs became necessary, this guzzler would probably be abandoned. This would reduce water availability for chukars and some small animal populations who are dependent on this water source. Populations of these small animals would slightly decline due to less water availability. Chukars would move to other water sources.

The closure of 4 miles of dead-end roads and 3 miles of vehicle ways would have little impact on most wildlife big game species due to the light vehicle use. Less disturbance to chukar and valley quail from hunters would occur due to the closure of roads and ways.

Acquisition of private land and mineral estate would ensure protection of habitat that is used by summering deer and bighorn sheep, chukars and nongame species.

Conclusion: Wildlife habitat and populations would be maintained on 16,905 acres designated wilderness. Small animal populations would decline slightly where one guzzler site would be abandoned.

Impacts on Watershed

The enhanced alternative would result in the same environmental consequences as the all wilderness alternative. By not constructing the two spring developments, the headcutting at Dipping Vat Spring and Schouver Spring would continue to worsen and the fecal coliform and turbidity would still be a serious problem on these two perennial streams in the WSA. Livestock pressure would continue to occur in these sensitive areas. There would be little change in the watershed over the rest of the area.

Conclusion: Headcutting problems on Dipping Vat Springs and Schouver Springs would continue to worsen, and water quality would remain poor on these two perennial streams.

Impacts on Livestock Grazing

Construction of two spring developments and two reservoirs, designed to increase use of available forage and reduce grazing pressure on some of the more sensitive areas, would be precluded under this alternative due to recurring maintenance needs utilizing vehicles. Without these projects, there would be a projected reduction in livestock grazing use in the Andrews allotment of 662 AUMs. This reduction would result in a total livestock grazing use of 1,774 AUMs in the WSA. This reduction is necessary due to a shortage of available forage in the Andrews allotment. Livestock grazing use of 1,377 AUMs in the South Steens allotment would remain unchanged. The season of use would remain from April 15 to October 31.

Vehicle use for livestock management and facility inspection and maintenance on the existing 3 miles of ways and 4 miles of dead-end roads would be precluded. This would result in some inconvenience and a slight additional expense to the two grazing livestock operators. Annual inspection and maintenance of fences not accessible by open roads would be done on foot or by the use of riding and pack animals. Heavy equipment may be used once every 10 years to maintain seven reservoirs and three spring developments and every 5 years to maintain 0.75 miles of pipeline.

Conclusion: Livestock use would be reduced by 662 AUMs. Vehicle use for routine livestock management on the 3 miles of ways and 4 miles of dead-end roads would be precluded.

Impacts on Recreation Use

Motorized vehicle use would be precluded on 16,905 acres, including 4 miles of dead-end roads and 3 miles of ways. This closure would eliminate all motorized vehicle use in the area.

The quality of primitive recreation would be expected to improve and such use would increase slightly by closure of the 4 miles of dead-end roads. Vehicle-oriented recreation is expected to be reduced and displaced into other areas and to be partially substituted by primitive recreation. Some vehicle-oriented recreationists, primarily hunters, may continue to use the WSA by traveling on foot or horseback. Others will find alternative areas where vehicle use is permitted. Primitive recreation activities are not expected to increase to a point where they offset the reduction in vehicle-oriented recreation. Projected use patterns indicate that the current level of 100 visitor days per year would remain the same over time.

Conclusion: Recreation use would remain the same at the current level of 100 visitor days per year.

Impacts of Local Personal Income

Livestock grazing would decrease by 662 AUMs. Overall recreation use would remain at 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $7,944 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $8,000.

No Wilderness/No Action (proposed action)

Recommended suitable for wilderness: 0 acres
Recommended nonsuitable for wilderness: 16,825 acres

Impacts on Wilderness Values

Under the no wilderness alternative, the entire 16,825 acres would not be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation and the area's special features, including scenic values associated with Alvord Peak and Sharp Peak, the lava dikes in the eastern foothills, bighorn sheep habitat, a plant species of special interest, crucial deer winter range and sage grouse would be subject to the effects of projected management actions, including mineral exploration and development, range development projects and continued vehicle use for recreation access.

Naturalness

All projected actions, including range improvements and mineral exploration and development would be allowed under the no wilderness alternative. These activities would affect naturalness to some degree by disturbing native vegetation or by altering the existing contour of the land.

Continued vehicle use on the 4 miles of dead-end roads, 3 miles of ways and 4 miles of additional access roads constructed in connection with projected mineral development activities would continue the impacts of vehicle tracks upon naturalness on approximately 2,100 acres (12 percent of the WSA).

Construction of the projected livestock developments, including two spring developments with source and overflow exclosures, two reservoirs and the accompanying changes in livestock use patterns would directly and indirectly impair naturalness on 224 acres in the southeastern and eastern portions of the WSA.

Expected mineral activities in the southeastern portion of the WSA would involve 173 acres of surface disturbance, as well as an additional 16 acres of surface disturbance resulting from construction of 4 miles of support roads and powerlines. Visual influence from these mineral activities would amount to 1,890 acres based on the varied terrain and vegetation in the area.

Solitude

Continued vehicle use on 3 miles of existing ways and 4 miles of existing dead-end roads, as well as the 4 miles of support roads constructed for mining activities, and human activity associated with mineral exploration, range improvement construction and mining activities, would cause repeated, but short-term local impairment of solitude opportunities adjacent to these activities. Mining activities would occur in the southeastern portion of the WSA and livestock developments would occur in the eastern and southeastern portions of the WSA. Solitude opportunities in the rest of the area would remain unchanged.

Primitive and Unconfined Recreation

Under this alternative, opportunities for primitive recreation would be reduced by the development of range improvement projects, continued vehicle use and mining activities.

Vehicle use would continue on existing roads and ways, as well as on 4 miles of new roads established for projected mining activities. Such use would continue to intrude upon primitive, nonmotorized recreation opportunities in the vicinity of the roads and ways in the WSA.

Expected mineral activities in the southeastern portion of the WSA would involve 173 acres of surface disturbance, as well as an additional 16 acres of surface disturbance resulting from construction of 4 miles of support roads and powerlines. The overall visual influence of the mining activities would reduce the natural setting for primitive recreation experiences by approximately 1,890 acres in the southeastern portion of the WSA.

Special Features

The summering band of bighorn sheep, crucial deer winter range, outstanding scenic qualities, sage grouse and a plant species of special interest identified as special features in this WSA would be subject to disturbance and impacts from development of other resources. Monitoring and mitigation measures could minimize or eliminate some of these impacts. Mineral exploration and development would result in 173 acres of surface disturbance, plus 16 additional acres of surface disturbance from 4 miles of road and powerline construction. This would result in a long-term, unnatural disturbance of the outstanding scenic qualities available from the WSA's ridgeline. Mineral development would be mitigated to prevent unnecessary and undue degradation of natural resources, although bighorn sheep habitat would be lost on the 189 acres disturbed by mining activities.

Conclusion: In the absence of wilderness designation, projected resource activities and developments would both directly and indirectly impair wilderness values over approximately 2,100 acres of the WSA, with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

The entire area would be open to mineral entry.

Energy Development

Although there is a high potential for geothermal resources along the extreme eastern edge of the WSA, geothermal exploration and development are not projected. The area is located on the western edge of a major geothermal field and any development is expected to take place to the east in the more accessible Alvord Valley.

Conclusion: There would be no impact on energy development in the WSA.

Mineral Development

Within the study area it is postulated that one gold mine would be developed due to the high mineral potential, the confidence level of that mineral potential and the economic value of the resource. This gold mine would cover 150 acres within a 15-year period and would require the construction of 4 miles of support roads and powerlines.

Conclusion: Projected development of one open-pit gold mine would occur.

Impacts on Vegetation

The 3 miles of existing ways and 4 miles of existing dead-end roads would not revegetate due to continued use by vehicles.

The two spring developments, with fenced sources and overflows (exclosures) would disturb two acres of surface area and corresponding vegetative cover. Within these exclosures vegetative cover would increase and the ecological status would move towards its potential natural vegetation. Construction of the two reservoirs would disturb four acres of surface area and corresponding vegetative cover. These developments would enhance watershed resources and alter grazing patterns to alleviate a shortage of available forage, allowing overall vegetation recovery within the study area.

The proposed mineral activities in the southeastern portion of the WSA would involve 173 acres of surface disturbance, with corresponding elimination of vegetative cover. This represents 1 to 2 percent of the WSA's surface area. Four miles of support roads and powerlines would be constructed, disturbing an additional 16 acres of surface area. Vegetation would be lost in those specific areas.

The plant species of special interest, *Phacelia gymnoclada* (thick-leaved phacelia), would be subject to disturbance from project mineral development since it is located within the southeastern portion of the WSA and not protected by law. Some impacts to the plant species and its habitat could occur; however, mineral development actions would be mitigated to minimize disturbance to this species.

Conclusion: Range and mining developments would result in a direct loss of vegetation on 195 acres. The plant species of special interest would be subject to disturbance by projected mining activities. Overall vegetation would recover due to changes in livestock grazing patterns.

Impacts on Wildlife Habitat

ODFW management objectives for deer and sage grouse could be met by the no wilderness alternative. Habitat of these species would be maintained. The projected gold mine may affect achievement of ODFW's objective of 100 bighorn sheep for the Alvord Peak herd due to some habitat destruction and influences on nearby sheep bedding areas from heavy equipment operations and vehicle use of additional access routes in the southeast portion of the WSA. Bighorns are not usually tolerant of human disturbance and the Alvord Peak populations may decline, or leave the area.

Habitat of chukars and small mammals would be slightly reduced by mineral development. Chukars would move to other areas. Small mammals would have their habitat destroyed over a small area, with a proportional loss of individuals.

The proposed 10-acre exclosures associated with livestock water developments at Schouver Spring and Dipping Vat Spring would allow an improvement in wildlife habitat due to an increase in cover and forage for chukar, valley quail, deer and many nongame species.

The two guzzlers and the exclosure at Burke Springs would be maintained as needed by vehicular means.

Conclusion: Most wildlife habitat and populations would be maintained at current levels. Bighorn sheep populations may decline.

Impacts on Watershed

The development of two springs, one at the head of Schouver Creek and one at Dipping Vat Spring, would result in exclusion of livestock from the areas with the worst headcutting problems, thus allowing the banks to begin to stablize. By piping water to troughs, away from the drainages, the streams flowing below the exclosures would be somewhat protected from extreme livestock utilization. Fecal coliform and turbidity would decrease in the perennial streams due to the exclusion of livestock at the headwaters. The location of the projected mining activities would not affect the perennial streams. There would be little change in the watershed over the rest of the WSA.

Conclusion: Stabilization of the current erosion problems at the two springs would occur and overall water quality would improve. Little change to watershed would occur over the rest of the area.

Impacts on Livestock Grazing

Livestock grazing use would be sustained at the current level of approximately 2,436 AUMs within the portions of the two allotments in the WSA. The season of use would remain from April 16 to October 31.

Vehicle use for livestock management and facility inspection and maintenance would continue on the 3 miles of ways and 4 miles of dead-end roads. The two new spring developments would exclude livestock from the water sources and overflows, but would provide clean water for livestock at water troughs located away from spring sources and drainages. The two new reservoirs would provide water for livestock in areas with under utilized forage. Making under utilized forage available to livestock would sustain livestock use at the present level, as well as alleviate the stress of over-utilized areas.

Conclusion: Livestock grazing use would continue at the current use level of 2,436 AUMs.

Impacts on Recreation Use

Motorized recreation use would continue within the WSA limited to the existing 3 miles of ways and 4 miles of dead-end roads, as well as the 4 miles of support roads established in conjunction with projected mining activities. Primitive recreation would decline moderately as a result of the projected increase in vehicle-oriented recreation and projected mineral and livestock developments. Correspondingly, human and mechanical activity would moderately increase. Projected use patterns indicate that the current level of 100 visitor days per year would increase over time, to 300 visitor days per year.

Conclusion: Recreation use would increase from the current level of 100 visitor days per year to approximately 300 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 2,436 AUMs. Projected energy and mineral development would amount to one metallic mine. Overall recreation use would increase by 200 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $2,400 per year, plus an unknown level of increase attributable to the projected mineral development.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by over $2,000.

Unavoidable Adverse Impacts of the Proposed Action

Under the Proposed Action (No Wilderness/No Action), projected mineral exploration and development activities would lead to unavoidable adverse impacts to wilderness values as a result of 189 acres of surface disturbance which visually influences an additional 1,890 acres. Construction of livestock developments, including two reservoirs and two spring developments, would disturb 6 surface acres and visually influence an additional 218 acres. A projected increase in recreational vehicle use of less than 2 percent per year, primarily along 4 miles of existing dead-end roads and 3 miles of ways, as well as 4 miles of support roads constructed in conjunction with projected mining activities, would locally impair wilderness values, as well as opportunities for primitive and unconfined recreation. Projected mining activities may affect bighorn sheep and their habitat and not allow the achievement of the ODFW management objective for 100 individuals in the Alvord Peak study area.

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity.

Under the Proposed Action, existing short-term uses would continue. Future development options, including projected mining activities and range developments, would remain open. Long-term ability of the area to produce wilderness values would be directly lost on 195 acres of the WSA with surface disturbance from mining and range developments, as well as further declines from other uses, such as motorized vehicle use, over the long term. These activities would visually influence approximately 2,100 acres. The productivity of the area for population increases of bighorn sheep may be foregone as a result of projected mining activities.

Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, mineral exploration and development would result in an irreversible commitment of the wilderness values and resources over 189 acres of the WSA, as well as an irretrievable commitment of mineral resources. Range improvement developments involving construction of two springs and two reservoirs would further reduce wilderness values on 6 acres directly. These activities would visually influence approximately 2,100 acres.

5. Wilderness Manageability and Rationale for the Proposed Action

Manageability of the Area as Wilderness

The Alvord Peak WSA is manageable as wilderness under both the all wilderness and enhanced wilderness alternatives. Manageability problems could occur under the all wilderness alternative due primarily to the 1,205 acres of private and split-estate lands and the possibility for development and access to them.

The study area's common boundary with private land should not be a significant manageability problem under either the enhanced wilderness or all wilderness alternatives. Although the boundary follows legal subdivisions and is not easily identified, most of the private boundary parcels are not near those portions of the WSA expected to receive the greatest amount of recreation use. Improving the identification of the boundary in these locations through fencing or signing would eliminate most of the problems.

Continued or increased use of the dead-end roads which enter the WSA could also cause manageability problems under the all wilderness alternative, although existing use is light (100 visitor days per year). Under the enhanced wilderness alternative, the manageability problems associated with the private inholding and split-estate lands and the dead-end roads would be eliminated. Potential problems with the development of adjacent private land could occur, but there are no known plans for development at this time.

Rationale for the Selection of the Proposed Action

The no wilderness/no action alternative is the proposed action in order to retain the option of mineral exploration and development and construction of livestock developments, which are needed to reverse the downward vegetative trend and prevent a reduction in livestock use. Although the area has several wilderness values, including bighorn sheep habitat, it is also located within an area identified as having a high potential for the occurrence of geothermal resources and mineral resources of gold, mercury and copper. Mercury and copper are strategic and critical minerals.

6. Summary and Analysis of Public Comments

Following is a summary of public comments specific to the WSA concerning adequacy of the analysis in this appendix, and responses to those comments. These comments were received both in writing and oral testimony at public hearings during the comment periods for the 1985 Draft EIS and the 1987 Supplement to the Draft EIS. Comments concerning the BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning statewide issues and analysis are addressed in the statewide volume.

Comment: Need to add burrowing owl to the text. **Response:** This species has been added to the Wildlife section, Chapter 3 - Affected Environment.

Comment: An additional alternative should be added which eliminates the high potential geothermal area from the suitable recommendation. **Response:** Although there is an opportunity to exclude the narrow strip of land on which geothermal resources are located, this small reduction is not substantial enough to result in impacts substantially different than the all wilderness alternative. Geothermal activities are not projected in this small area for reasons given under Energy and Mineral Development Actions, No Wilderness/No Action Alternative; Chapter 2, Management Actions.

Comment: Discuss impacts of vehicle access on bighorn sheep under no wilderness alternative. **Response:** Vehicle access will be limited to existing dead-end roads and ways in the WSA due to topography and off-highway vehicle designation. These dead-end roads enter the WSA for a short distance and are not located in the higher elevations of the WSA, which the bighorn sheep prefer. Vehicle access is not projected to have a significant impact on bighorn sheep; however, mining activities may have significant impacts on bighorn sheep and their habitat. For further discussion, see Impacts to Wildlife Habitat, No Wilderness/No Action Alternative; Chapter 4, Impacts of the Alternatives.

Comment: Much of WSA contains ungrazed native grasses in excellent condition; should be listed as a special feature. **Response:** A portion of the native grasses located on the steeper slopes are either lightly grazed or ungrazed, but the sites they are growing on are in fair (mid-seral) to not good (late seral) ecological condition. Also, the majority of the WSA is grazed by livestock and bighorn sheep. These native grasses are not unique to the WSA and can be found in areas surrounding the WSA.

Comment: The ACEC designation does not provide adequate protection of the bighorn sheep habitat **Response:** The ACEC designation would provide some restrictive protection on mineral exploration activities, such as limitations on vehicle access and season of use. The current ACEC designation would not prevent mining activities conducted under the mining law from occurring in the WSA. These mining activities could have a significant impact on bighorn sheep and their habitat, as stated in Impacts to Wildlife Habitat, No Wilderness/No Action; Chapter 4, Impacts of the Alternatives.

Comment: Wilderness designation would protect the T&E species of Whitehorse cutthroat trout. **Response:** Although there are 2 miles of perennial streams located in this WSA, there are no fish species located within these streams.

Table 1. Summary of Proposed Management Under Each Alternative, Alvord Peak WSA (OR-2-83)

Proposed Management	All Wilderness	Enhanced Wilderness	No Wilderness/ No Action
Acres Designated as Wilderness	16,825	16,825	0
Acres Closed to ORV by Wilderness Designation [1]	16,825	16,825	0
Miles of Roads Closed	0	4	0
Miles of Roads Constructed	0	0	4
Miles of Ways Closed	3	3	0
Acres of Full Fee Estate Acquired [2]	0	80	0
Acres of Mineral Estate Acquired[3]	0	1,125	0
Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation	15,700	15,700	0
Miles of Powerlines Constructed	0	0	4
Mine Sites Developed (number)	0	0	1
Structural Livestock Projects Developed:			
Reservoirs & Waterholes (numbers)	0	0	2
Springs (numbers)	0	0	2
Livestock Forage Allocation Reductions (AUMs)	662	662	0

[1] Except for 4 miles of roads and 3 miles of ways in the WSA, most of the acreage shown is already closed to cross-country travel vehicle use through a "limited" ORV designation
[2] Upon acquisition, these additional lands would be incorporated into the wilderness area, closed to vehicle use, and withdrawn from mineral location and leasing.
[3] Upon acquisition of mineral estate, these lands would be withdrawn from mineral location and leasing.

Table 2. Summary of Environmental Consequences of Alternatives, Alvord Peak WSA (OR-2-83)

Resource or Activity	All Wilderness	Enhanced Wilderness	No Wilderness/No Action (Proposed Action)
Wilderness Values	Wilderness designation of the entire 16,825 acres within the WSA would result in the protection of the existing wilderness values and probable enhancement of those values.	Wilderness designation of the 16,905 acres (assuming acquisition of 80 acres of private land) would result in the protection of existing wilderness values and enhancement of those values. Acquisition of mineral estate would further enhance the total area by preserving wilderness values on all lands within the wilderness boundaries.	In the absence of wilderness designation, projected resource activities and developments would both directly and indirectly impair wilderness values over approximately 2,100 acres of the WSA, with further declines from other potential uses over the long term.
Energy and Mineral Development	No impact to energy development is expected. Production foregone from one projected open-pit gold mine.	Same as all wilderness, except exploration precluded on an additional 1,205 acres, with private land and mineral estate acquisition.	Projected development of one open-pit gold mine would occur.
Vegetation	The 3 miles of ways (totaling 3 acres) would eventually revegetate. Overall vegetation would continue to decline on the average.	The 3 miles of ways and 4 miles of road (totaling 11 acres) would eventually revegetate. Overall vegetation condition would continue to decline on the average.	Range and mining developments would result in a direct loss of vegetation on 195 acres. The plant species of special interest would be subject to disturbance by projected mining activities. Overall vegetation would recover due to changes in livestock grazing patterns.
Wildlife	Wildlife habitat and populations would be maintained on 16,825 acres designated wilderness. Small animal populations would decline where one guzzler site would be abandoned.	Wildlife habitat and populations would be maintained on 16,905 acres designated wilderness. Small animal populations would decline slightly where one guzzler site would be abandoned.	Most wildlife habitat and populations would be maintained. Bighorn sheep populations may decline.
Watershed	Current headcutting problems would continue to worsen and and the water quality would remain poor on 2 miles of perennial streams. Little change in watershed over rest of area.	Same impacts as for all wilderness.	Current erosion problems at 2 springs stablized. Overall water quality would improve. Little change to watershed over rest of area.
Livestock Grazing	Livestock use would be reduced by an estimated 662 AUMS. Vehicle use for routine livestock management on 3 miles of ways would be precluded.	Livestock use would be reduced by 662 AUMs. Vehicle use for routine livestock management on the 3 miles of ways and 4 miles of dead-end roads would be precluded.	Livestock grazing use would continue at the current use level of 2,436 AUMs.
Recreation Use	Recreation use would remain the same at the current level of 100 visitor days per year.	Recreation use would remain the same at the current level of 100 visitor days per year.	Recreation use would increase from the current level of 100 visitor days per year to approximately 300 visitor days per year.
Local Personal Income	Annual local personal income would decrease by approximately $8,000.	Annual local personal income would decrease by approximately $8,000.	Annual local personal income would increase by over $2,000.

Table 3. Classification of Energy and Mineral Potential, Alvord Peak WSA (OR-2-83)

Commodity	Area	Level of Potential	Level of Certainty
Metals (copper, mercury, and gold)	Entire WSA	H	D
Geothermal	See map 4	H	D
	Rest of WSA	L	B
Uranium/Thorium	Entire WSA	L	B
Coal	Entire WSA	O	C
Oil/Gas	Entire WSA	L	A
Tar Sands/Oil Shale	Entire WSA	O	C
Limestone	Entire WSA	O	C
Bentonite	Entire WSA	L	A
Diatomite	Entire WSA	L	A
Zeolites	Entire WSA	L	A

Legend:

Level of Potential

O - No indication for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Moderate potential for accumulations of energy/mineral resource
H - High potential for accumulations of energy/mineral resource

Level of Certainty

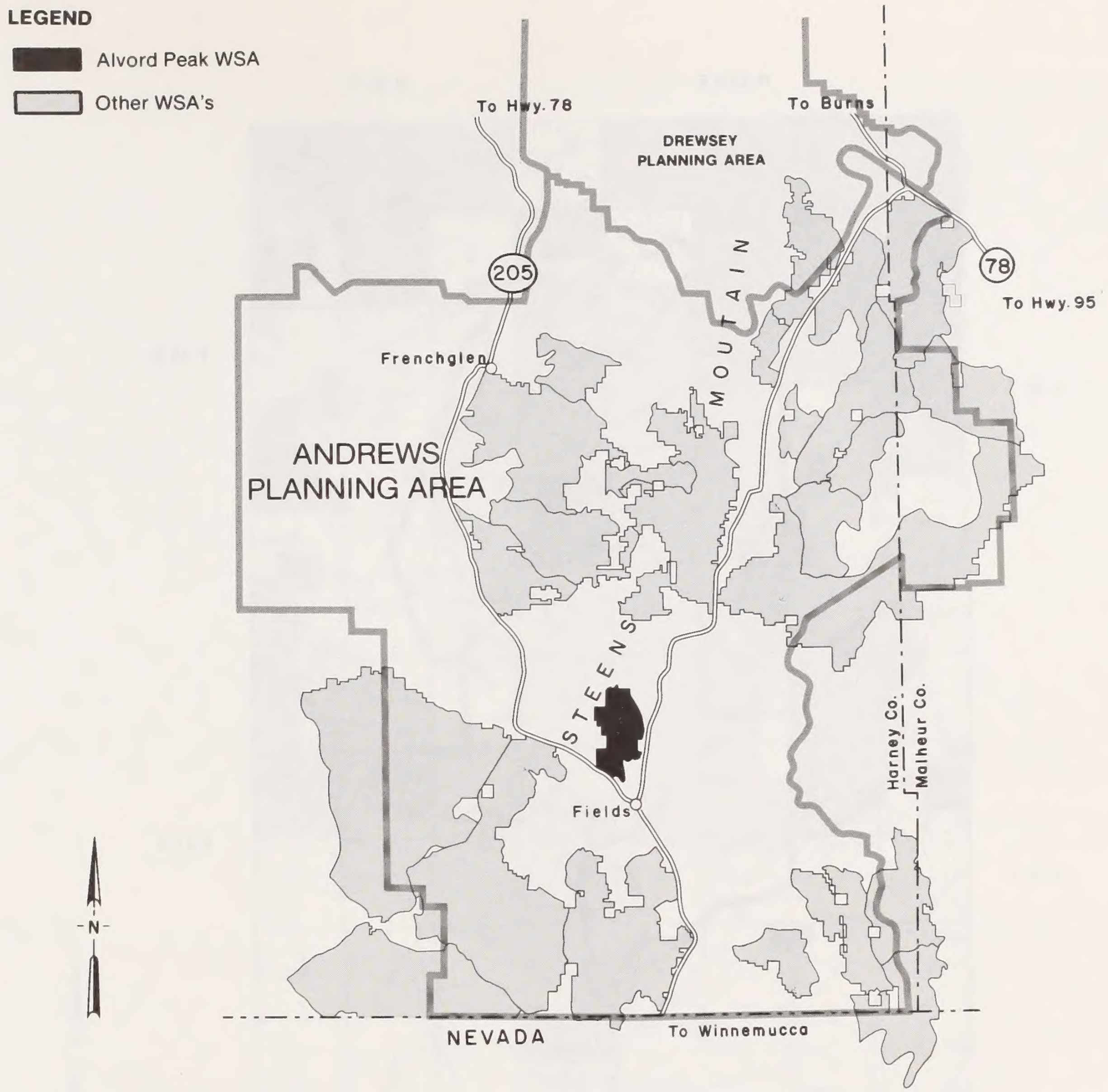
A - Insufficient data or no direct evidence
B - Indirect evidence available
C - Direct evidence but quantitatively minimal
D - Abundant direct and indirect evidence

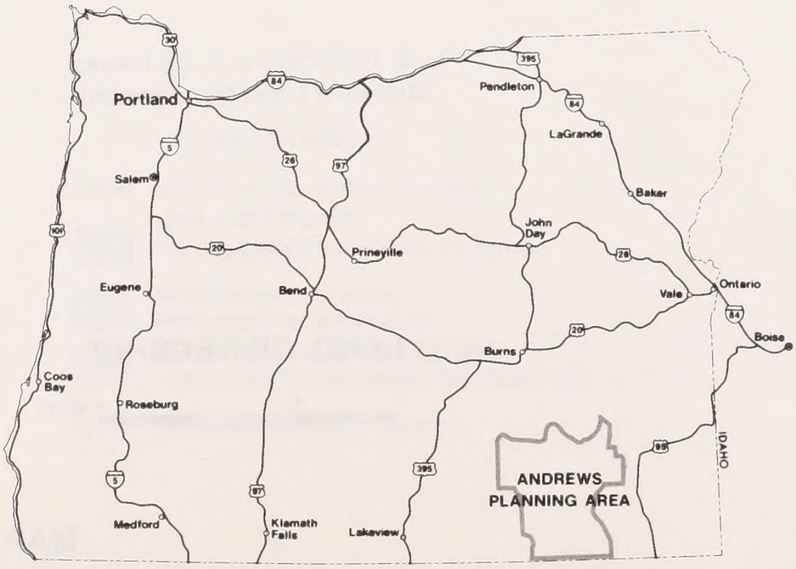
Table 4. Existing Livestock Use, Alvord Peak WSA (OR-2-83)

Grazing Allotment	Licensed AUMs in Allot.	Period of Use	Percent of Allot. in WSA	Current Estimated Use in WSA (AUMs)
Andrews (No. 6019)	3,852	04/16-10/31	22	1,059
South Steens No. 6002)	23,681	04/16-10/31	2	1,377
Totals	27,533			2,436

Table 5. Effects of Alternatives on Local Personal Income, Alvord Peak WSA (OR-2-83) (1981 price levels)

Item	Unit of Measure	All Wilderness	Enhanced Wilderness	No Wilderness/ No Action
CHANGES IN RESOURCE OUTPUTS				
Livestock Grazing	AUMs	-662	-662	No change
Energy & Mineral Development:				
Metallic Mines	Number	No change	No change	+1
Recreation Use	RVD	Negligible	Negligible	+200
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES				
Livestock Grazing	$	-7,944	-7,944	0
Energy & Mineral Development:				
Metallic Mines	$	0	0	Unkown
Recreation Use	$	0	0	+2,400
Total	$	-7,944	-7,944	+2,400





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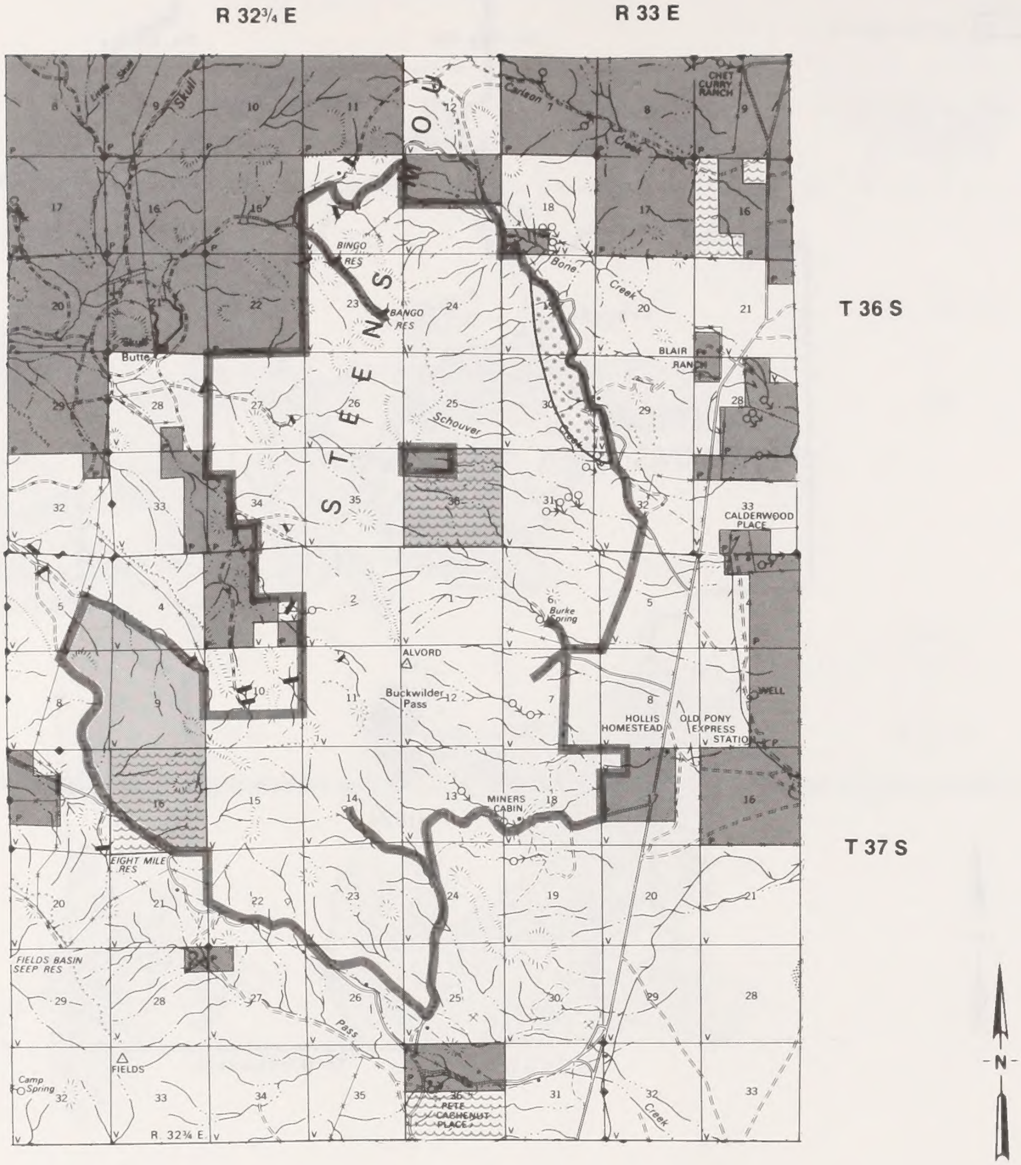
Burns District

Alvord Peak WSA
OR-2-83

LOCATION MAP

10 0 10 MILES

MAP 1



LEGEND

▨ BLM Land Studied Under Section 202 of FLPMA (Other BLM Land in WSA Studied Under Section 603 of FLPMA)

▬ Wilderness Study Area Boundary

☐ Bureau of Land Management

■ Private

▤ BLM Surface-State or Private Subsurface (Split Estate)

⁘ Deer Winter Range

Entire WSA: Alvord Peak ACEC

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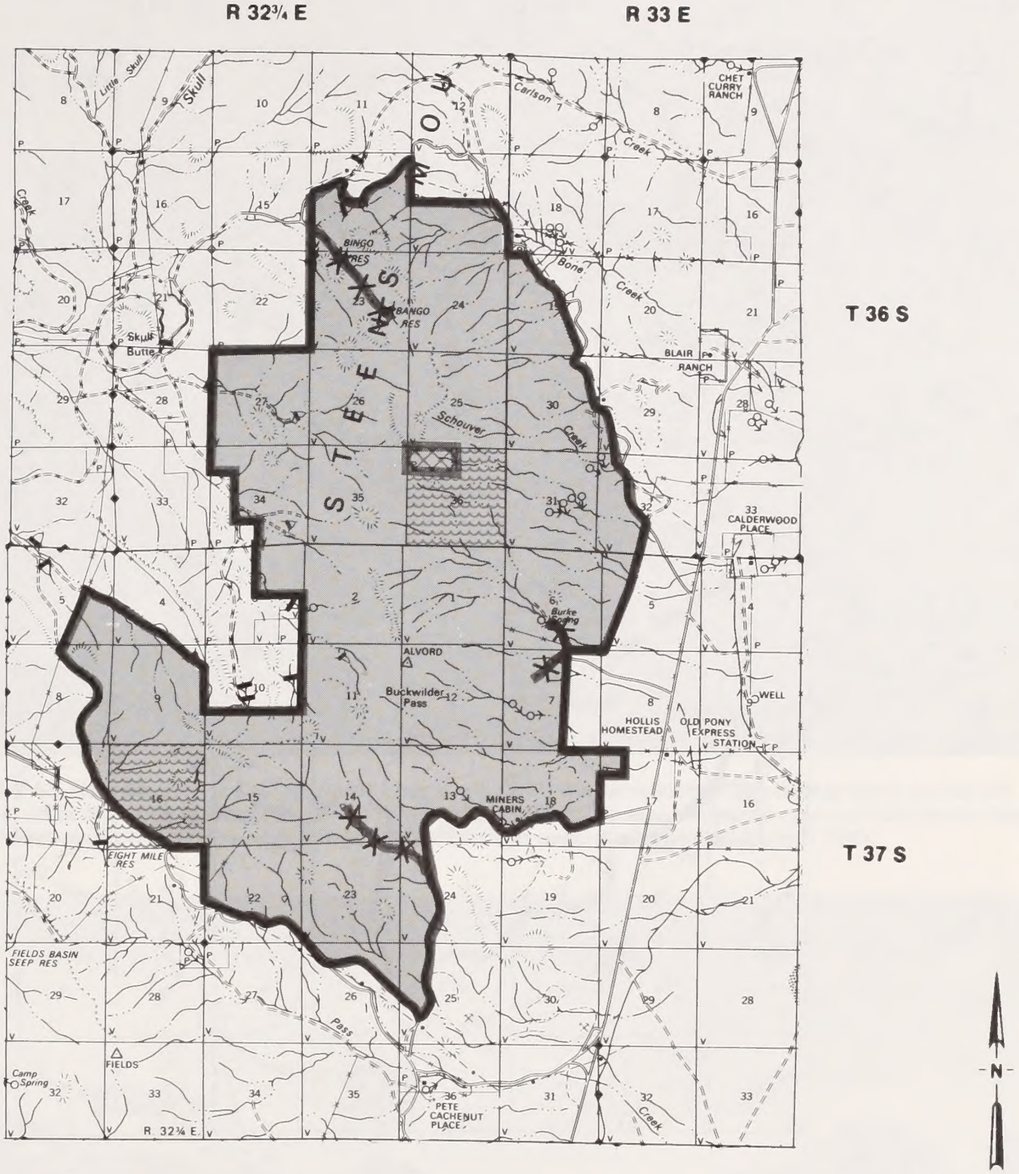
Burns District

Alvord Peak WSA
OR-2-83

LAND OWNERSHIP

1 0 1 2 MILES

MAP 2



▬ Wilderness Study Area Boundary

▢ Recommended Suitable for Wilderness

▩ Non-Federal Land within Recommended Wilderness

▤ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness

✕✕ Recommended Road Closure

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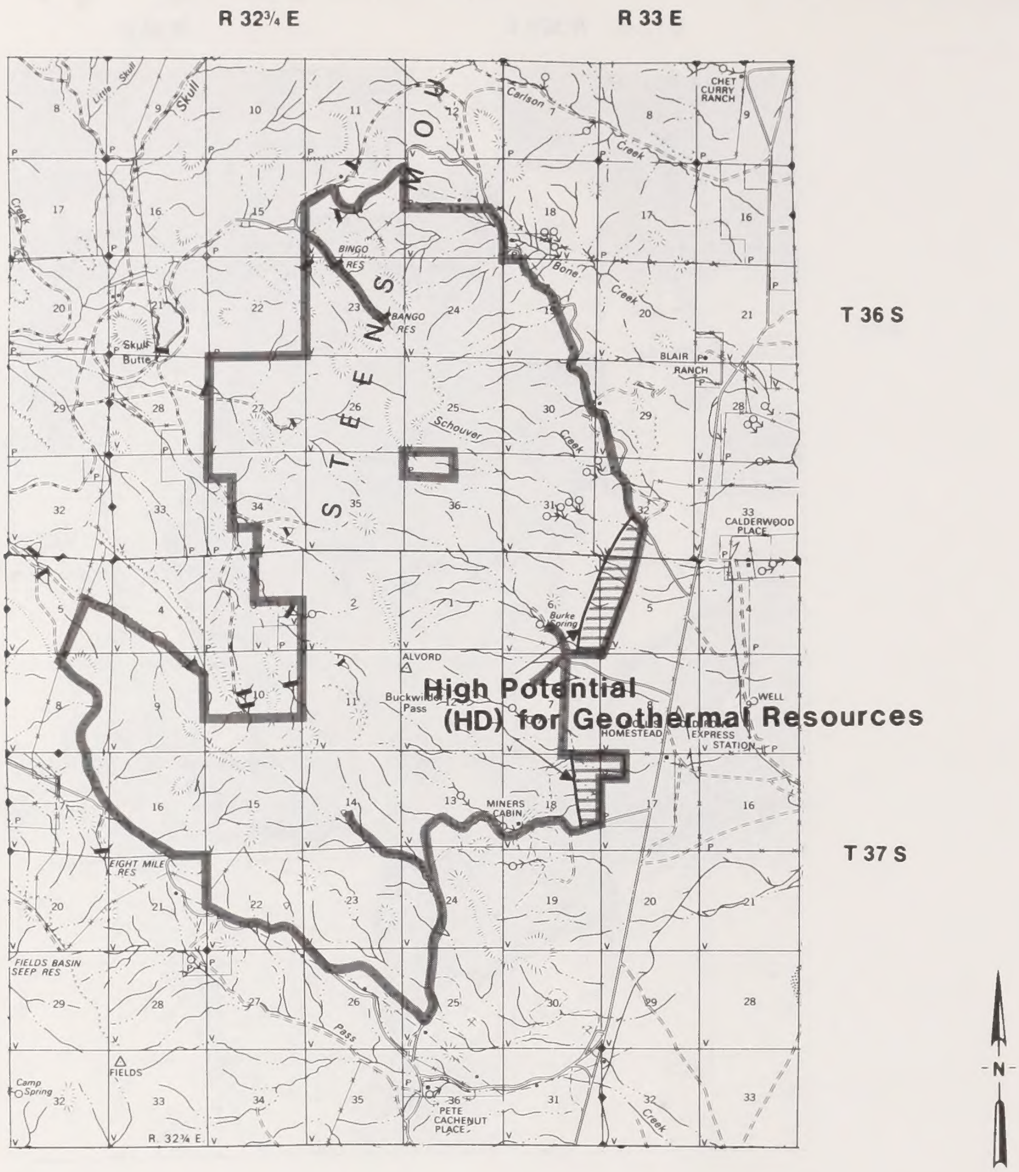
Alvord Peak WSA
OR-2-83

ENHANCED ALTERNATIVE

1 0 1 2 MILES

MAP 3



Entire WSA:
High Potential
(HD) for Mercury, Copper and Gold

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Alvord Peak WSA
OR-2-83

MODERATE OR HIGH POTENTIAL
MINERAL OR ENERGY RESOURCES

1 0 1 2 MILES

MAP 4

Alvord Peak WSA, OR-2-83. Near the top of a ridgeline looking south. With the exception of the background on the left (the Pueblo Mountains) all of this area is within the Alvord Peak WSA. Within the area recommended suitable under the enhanced and nonsuitable under the proposed action (no wilderness/no action) alternative. August 1983.

Alvord Peak WSA, OR-2-83. Taken from the county road paralleling the eastern side of the study area looking west showing the eastern face of the ridgeline from Alvord Peak (left) to the north. Within area recommended suitable under the enhanced and nonsuitable under the proposed action (no wilderness/no aciton) alternative. Private land and part of a seeding which form the eastern boundary make up the flatter terrain in the foreground. April 1984.

Appendix to the Wilderness Environmental Impact Statement for Oregon

Basque Hills Wilderness Study Area (OR 2-84)

1. Introduction

General Description of the Study Area

The Basque Hills Wilderness Study Area (WSA) is located 90 miles south of Burns (18 miles west of Fields and 10 miles north of the Oregon/Nevada state line) in Harney County (see Map 1). The WSA is 24 miles south of the end of Oregon State Highway 205 and less than 1 mile from the county road that runs from Highway 205 to Fields.

About half of the Basque Hills WSA is in the Burns District, the remainder (the western side) lies within the Lakeview District.

The triangular-shaped study area contains 141,410 acres of public land (see Map 2). At the extremes, the study area is 22 miles long and 17 miles wide. Most of the eastern and western boundaries are formed by BLM low standard roads and private land. A portion of the area's northern boundary line is also formed by a BLM low standard dirt road, but most of this boundary is adjacent to private property. The southern boundary line, located in the Lakeview District, is a dirt road.

Three dead-end roads, totaling 25 miles, penetrate the WSA and also form part of the overall boundary line. These roads enter the study area in the northwest corner, from the eastern boundary and from the southeastern boundary. There is one 320-acre private parcel located along a dead-end road; overall, 520 acres of private land are located within the WSA. The WSA also contains 4,190 acres of split-estate land.

The Basque Hills WSA is a high desert area with some foothills and rimrock. The landscape is predominantly flat to very gently rolling. Most of the study area consists of broad, flat expanses and a few low foothills. The major topographic features of the area include Fish Fin Rim in the northwestern corner, Red Butte and another rock outcropping also referred to as Fish Fin Rim near the center of the WSA, Coyote Rim and Catlow Valley in the northeast and Basque Hills in the southeast.

Scattered throughout the area are dry lakebeds which are commonly found in shallow depressions. The largest of these lakebeds, Slickey Lake, is located in the northeastern portion of the study area in Catlow Valley.

The average elevation of the WSA is about 5,000 feet. The lowest elevation (4,520 feet) occurs near the northern boundary in Catlow Valley. The highest point in the WSA (5,909 feet) occurs in the Basque Hills along the southeastern boundary.

There are no perennial streams within the WSA. Many shallow intermittent drainages cross the study area, generally draining the area to the north and northeast into the Catlow Valley.

The vegetation throughout the WSA includes big sagebrush, rabbitbrush, scattered patches of low sagebrush and a variety of grasses. A variety of salt desert shrub species occurs in Catlow Valley, the northeastern portion of the study area. These species include shadscale, greasewood, spiny hopsage, winterfat, Nuttal's saltbush and Great Basin wildrye.

Interrelationships

Adjoining the Basque Hills WSA across the east boundary road is the Rincon WSA (OR-2-82).

The Pueblo-Lone Mountain grazing allotment incorporates part of the Basque Hills WSA, the adjacent Rincon WSA and two other WSAs, Hawk Mountain (OR-1-146) and the Pueblo Mountains (OR-2-81). Proposals to construct range improvements in the portion of the Basque Hills WSA within the Pueblo-

Lone Mountain allotment are related to grazing management concerns and proposed improvements in the other three WSAs.

A portion of the South Steens allotment covers part of the WSA and a portion of the Lakeview District's Beatys Butte allotment also lies within the WSA.

The WSA is located in the ODFW's Beatys Butte Management Unit which contains 2,507 square-miles of land. The WSA supports a winter population of an estimated 200 antelope and 200 deer, and a summer population of 100 deer and 100 antelope. ODFW has not set management objectives for antelope, but has an objective of 3,000 deer in the Beatys Butte Management Unit. ODFW conducts aerial monitoring of wintering antelope within the WSA. The goal for nongame wildlife is to maintain populations of naturally-occurring species at self-sustaining levels. The proposed action for this WSA conforms with ODFW's management objectives for game and nongame species.

The U.S. Department of Agriculture conducts a predator-control program to reduce predator damage to livestock by aerial shooting of coyotes.

The western portion of the WSA is in the Beatys Butte Wild Horse Management Area (HMA). Management of the HMA will not be substantially affected by any of the alternatives.

Harney County has not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study and EIS planning, scoping and public review process. These issues concern both the effects of wilderness designation on existing and potential land uses or resources in the WSA, as well as the effects of existing and potential land uses or resources on wilderness values. Land uses or resources raised as issues specifically for this WSA include:

- impact on wilderness values,
- impact on mineral exploration and development,
- impact on deer, nesting golden eagles and prairie falcons, and other nongame wildlife habitat and populations,
- impact on livestock grazing use levels and management, and
- impact on the proposed east-west utility corridor through the northern portion of the WSA.

No other issues specific to this WSA were raised by BLM or the public.

2. Description of the Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made.

The following alternatives are analyzed:

- all wilderness
- enhanced wilderness
- no wilderness/no action (Proposed Action)

Closing the boundary road and combining the Basque Hills WSA with the adjacent Rincon WSA is not analyzed under the enhanced wilderness alternative. The road separating the two WSAs provides access for livestock users, private landowners, recreationists and BLM personnel. These roads are significant access routes in areas where there is minimal access. Combining Basque Hills WSA with Spaulding WSA and the lands between the two WSAs is also not analyzed for the same reasons. In addition, combining the study areas would not significantly improve the manageability or wilderness qualities of any WSA.

A partial alternative is not analyzed because there are no opportunities to eliminate resource conflicts by reducing the size of the area recommended suitable and still retain an area which has wilderness characteristics.

All Wilderness

The all wilderness alternative would recommend all 141,410 acres of public land in the Basque Hills WSA suitable as wilderness (see Map 2). For purposes of analysis, it is assumed that the private lands and the mineral estate of the split-estate lands would not be acquired. The dead-end roads which enter the area would remain open.

Energy and Mineral Development Actions

Wilderness designation would close 137,220 acres of public land within the WSA to all forms of appropriation under the mining and mineral leasing laws. A total of 4,710 acres of mineral estate of split-estate land and private land would remain open to mineral exploration and development.

Diatomite, mercury, gold and copper are given a moderate potential for occurrence based on favorable geology but no direct evidence. However, there are no known deposits of sufficiently large ore bodies that would merit development. Therefore, extensive mineral exploration and development of these resources is not expected to occur on the split-estate land and private lands within the WSA.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Access for annual maintenance of one of the two existing guzzlers in the WSA would be on foot. The other would be abandoned in the absence of vehicular access for maintenance.

Livestock Management Actions

Livestock grazing use would remain at the current estimated level of approximately 6,576 AUMs within the portions of the South Steens, Pueblo-Lone Mountain and Beatys Butte allotments located within the WSA. The seasons of use and distribution of AUMs for all three allotments are as shown in Table 4.

Vehicle use for livestock management on 74 miles of ways would be precluded. Management of livestock and maintenance of 31 miles of fence and two wells would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years to maintain the 16 existing reservoirs.

Utility Corridor Routing and Development Actions

The proposed utility corridor would be rerouted north of the WSA.

Recreation Management Actions

Use of motorized vehicles would be precluded within the study area on 141,410 acres of public land. This would involve use of 74 miles of ways and cross-country travel. The three dead-end roads would remain open, allowing vehicle access into the study area. Current recreational use is estimated to be less than 100 visitor days per year.

Enhanced Wilderness

The enhanced wilderness alternative would recommend all 141,410 acres of public land within the WSA suitable for wilderness (see Map 3). Also, an attempt would be made to acquire the mineral estate of 4,190 acres of split-estate land and the 520 acres of private land through purchase or exchange with willing owners. Assuming acquisition of private lands, the total area recommended suitable under this alternative would be 141,930 acres.

The three dead-end roads (totaling 25 miles) within the area would be closed, as well as the 74 miles of ways.

The land acquisitions and road closures would result in only minor boundary adjustments.

Energy and Mineral Development Actions

Wilderness designation would close 137,220 acres of public land to all forms of appropriation under mining and mineral leasing laws. If acquisition is successful, 4,190 acres of mineral estate of split-estate land and 520 acres of private land would also be closed to mineral entry, for a total of 141,930 acres.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Access for annual maintenance of one existing guzzler would be on foot. The other existing guzzler would eventually be abandoned in the absence of vehicular access for maintenance.

Livestock Management Actions

Livestock grazing use would remain at the current estimated level of approximately 6,576 AUMs within the portions of the South Steens, Pueblo-Lone Mountain and Beatys Butte allotments located within the WSA. The seasons of use and distribution of AUMs for all three allotments are as shown in Table 4.

Vehicle use for livestock management on 25 miles of roads and 74 miles of ways would be precluded. Management of livestock and maintenance of 31 miles of fence and two wells would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years to maintain the 16 existing reservoirs.

Utility Corridor Routing and Development Actions

The proposed utility corridor would be rerouted north of the WSA.

Recreation Management Actions

Assuming acquisition of the private lands, the entire 141,930 acres would be closed to recreation vehicle use, involving 74 miles of ways and 25 miles of roads and any cross-country travel. Current recreational use is estimated to be less than 100 visitor days per year.

No Wilderness/No Action (Proposed Action)

The no wilderness/no action alternative would recommend the entire WSA nonsuitable as wilderness. It represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

All of the 141,410 acres in the WSA would be open to mineral exploration and development.

Diatomite, mercury, gold and copper are given a moderate potential for occurrence based on favorable geology but no direct evidence. However, there are no known deposits of sufficiently large ore bodies that would merit development. Therefore, extensive mineral exploration and development of these resources is not expected to occur within the WSA.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

A wildlife habitat improvement project for brush removal on approximately 7,000 acres would be implemented in the northern part of the study area, west of Coyote Rim. This project, primarily for antelope habitat improvement, would occur in the same vicinity as the two proposed livestock vegetative manipulation projects described in the following Livestock Management Actions.

Livestock Management Actions

Livestock use would increase from the current estimated use in the WSA of 6,576 AUMs to 15,191 AUMs. The existing seasons of use and distribution of AUMs for all three allotments are shown in Table 4.

Range improvements for the portion of all three allotments located within the WSA would be constructed and would include a total of 14 reservoirs, 3 wells, 40 miles of pipeline, 13 miles of fence, 2 water storage tanks and 22,530 acres of brush control and seeding. In the WSA's portion of the Pueblo-Lone Mountain allotment (eastern quarter of the WSA), 9 reservoirs and 21 miles of pipeline would be constructed. These projects would make available an additional 1,360 AUMs of existing forage for livestock use. In the WSA's portion of the South Steens allotment (northeastern corner of the WSA), 2 reservoirs, 3 wells, 16 miles of pipeline, 8 miles of fence, 2 water storage tanks and a 14,060-acre brush control and seeding project would be implemented and could result in a potential increase of 4,850 AUMs. In the WSA's portion of the Beatys Butte allotment (western portion of the WSA), 3 reservoirs, 3 miles of pipeline, 5 miles of fence and an 8,470-acre brush control and seeding project would be developed and could result in a potential increase of 2,405 AUMs. The developments in the WSA's portion of South Steens and Beatys Butte allotments are to increase forage production.

Vehicle use for livestock management and maintenance of 44 miles of fence,30 reservoirs and 40 miles of pipeline would occur on 74 miles of ways. The ways would be used 10 times per year to check livestock, maintain facilities and spread salt. Mechanized heavy equipment would be used on the average of once every 10 years to maintain 30 reservoirs and every 5 years to maintain 40 miles of pipeline.

Utility Corridor Routing and Development Actions

The proposed utility corridor would be designated as planned and would be available to route a proposed 500-kV powerline l6.5 miles through the northern portion of the WSA.

Recreation Management Actions

Vehicle-oriented recreation would continue on 74 miles of ways and 25 miles of roads. Some cross-country travel would also occur. Current recreational use is estimated to be less than 100 visitor days per year.

Summary

Table 1 summarizes the projected management actions under each alternative.

Table 2 summarizes the environmental consequences of each alternative.

3. Affected Environment

This section discusses only those activities or resources which may influence the character of the study area, or that may be affected by the alternatives.

Wilderness Values

Naturalness

Basque Hills WSA is in a relatively natural condition. None of the unnatural features within the study area are substantially noticeable and most of the features can be seen from only a very small portion of the study area.

The study area contains 42 unnatural features. They are 20 water developments, including 16 reservoirs, 2 developed wells and 2 wildlife guzzlers. There are also 19 vehicle ways totaling about 74 miles, 2 fences totaling about 31 miles, the remains of an old horse trap and a cow camp. It is estimated that approximately 3 percent of the study area is influenced by these features.

Due to the rolling hills, this area, most of the water developments can be viewed from only a small area in the vicinity of each development. Several of the reservoirs influence a larger area because of their locations near a high point or within a broad, sloping depression. Overall, water developments influence less than 1 percent of the study area.

The 74 miles of vehicle ways in the study area consist of mostly overgrown vehicle tracks through the sagebrush. Generally, these tracks are not noticeable, except along their alignment. Only in a few instances are these ways clearly visible, or visible from adjacent higher elevations. One vehicle way is a well-defined extension of the road which crosses the eastern half of the study area and is visible within the immediate vicinity. However, even this way is sufficiently screened by vegetation from the surrounding terrain to make it substantially unnoticeable.

The most noticeable unnatural feature is the district boundary fence which enters the study area from the north. During construction of the fence, a wide trail was bladed to remove sagebrush and make fence construction easier. A way, 7.5 miles in length, has also been established in this bladed trail. The way and fence are intermittently visible from the hills, which rise to the west and south, and from other portions of the surrounding terrain.

Most of the remaining fences easily blend in with the surrounding landscape. The fences only become a noticeable development within their immediate vicinity.

The remaining developments, the abandoned horse trap and a cow camp, have a very slight visual influence on the study area. Very little remains of the horse trap; three stone fences provide the only indication of past activity. The cow camp is located adjacent to the boundary road on the southeastern side of the WSA. A ridgeline to the west of the camp screens this development from the remainder of the study area, so very little acreage is influenced by this development.

The most significant outside sights are the roads which form the boundary of most of the area. These roads present a noticeable visual contrast, but not substantial enough to detract from the natural appearance of the WSA. The other outside sight which has a very minor influence on the area is the Hawk Valley crested wheatgrass seeding adjacent to the southeastern boundary. It does not detract from the wilderness character of the study area.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

Opportunities for solitude in the Basque Hills WSA are outstanding. These opportunities are enhanced by the area's large size and the topographic screening provided by rolling hills. The low, broad hills and rims in the central, eastern and northwestern portions of the WSA provide outstanding opportunities for solitude. Although sagebrush is present throughout the area, it is low growing and does not provide vegetative screening.

The area does not provide any outstanding opportunities for primitive forms of recreation. Opportunities for day hiking, backpacking, hunting and sightseeing are only of moderate or low quality due to the lack of topographic features, vegetative diversity and availability of water.

Special Features

Three special features within the Basque Hills WSA add to the value of this area as wilderness.

A newly discovered plant species, *Eriogonum crosbyae*, has been located in the northwest portion of the WSA. (The Vegetation section further discusses this plant species.)

Raptor nesting is concentrated in areas along Coyote Rim and the other rims in the eastern half of the WSA. Raptors actively nesting along the rims include golden eagles, red-tailed hawks, kestrels, prairie falcons and great horned owls (see Map 2).

The kit fox, on the ODFW's List of Threatened species, may range into the WSA.

Diversity in the National Wilderness Preservation System (NWPS)

According to the Bailey-Kuchler system of classifying ecosystems, the WSA is in the Intermountain Sagebrush Province and the potential natural vegetation is sagebrush-steppe communities.

The WSA contains five plant communities identified in the Basin and Range section of the Oregon Natural Heritage Plan. These are big sagebrush/bluebunch wheatgrass, big sagebrush/greasewood, Indian ricegrass/needlegrass community, winterfat community, bare playa and playa margin communities.

The Basque Hills WSA is within five hours' driving time of three standard metropolitan statistical areas with a population of over 100,000: Medford, Oregon; Boise, Idaho; and Reno, Nevada.

Energy and Mineral Development

The geology, energy and mineral resources of the Basque Hills WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, and correlating rock units in the WSA with similar environments in other areas that are known to contain mineral deposits. Technical details of the evaluation findings are in a report of the assessment of mineral resources, "Lone Mountain Geologic Resource Area (GRA OR-021-22), Harney County, Oregon," prepared by TERRADATA (a BLM contractor) and in a BLM report on the assessment of mineral resources in the South Harney GRA.

The WSA is within the Lone Mountain Geologic Resource Area which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level). A description of the rating system is provided in the Statewide EIS volume.

Table 3 shows the energy and mineral potentialclassification for the WSA. Map 4 shows where energy and mineral resources have a moderate or high potential for occurrence in the WSA.

The surface rocks are composed mainly of Tertiary volcanic units which fall into two general groups based on age. The oldest groups are composed of Miocene Steens basalt flows with rare interlayers of tuff, locally occurring andesite and basalt flows, and minor interbeds of tuffaceous sedimentary rocks and tuffs. Also included in this group are the tuffaceous sedimentary rocks and tuffs of the Trout Creek formation. The second group of volcanic rocks (Pliocene Age) are composed of semi-consolidated lacustrine (lake) tuffaceous sandstone, siltstone, ashy diatomite and interbedded flows of basalt and andesite.

Quaternary deposits consist of exogenous domes and flows of rhyodacitic composition, a few dikes and sills of basaltic composition, and alluvial deposits of gravel, silt and sand.

Energy Resources

There are no energy resources with moderate or high potential for occurrence in the WSA. As of October 16, l987, the area contained no oil and gas or geothermal leases.

Mineral Resources

The entire WSA is rated as having a moderate potential for the occurrence of metals based on geologic favorability but no direct evidence. The geological environment is similar to environments found in the Pueblo-Steens Mountains, where hydrothermal deposits of copper, mercury and accessory gold occur in silicified fault zones. Copper and mercury are strategic and critical minerals, which are among the metals rated moderate in the WSA. The area also has a moderate potential for the occurrence of diatomite, again based on indirect evidence. Aside from abundant road aggregate sources, there are no known occurrences of mineral deposits within the WSA. The area did not contain any active mining claims as of October 16, 1987.

Vegetation

The most common plant community is big sagebrush/bunchgrass. On flat to gently sloping terrain, the most common understory species are squirreltail, Sandberg's bluegrass and cheatgrass. Bluebunch wheatgrass and Thurber's needlegrass occur in areas of better condition and on steeper slopes. The successional stage is estimated to be mid-seral, with the steeper areas being late seral. The primary potential natural community is probably bluebunch wheatgrass and big sagebrush.

In the Catlow Valley portion of the WSA, other small vegetative communities exist on the flat valley bottom. Winterfat, greasewood, shadscale and Nuttal's saltbush are dominant shrubs on some sites, but much of the valley floor is grassland interspersed with various shrub species. Most of the grassland is composed of squirreltail, creeping wildrye or Indian ricegrass.

Cheatgrass, Great Basin wildrye and big sagebrush also occur in some areas. The successional stage of the valley floor is probably early to mid-seral. The potential natural community will vary, but on most sites will generally be one of three communities: Nuttal's saltbush/winterfat/Indian ricegrass, big sagebrush/wildrye or greasewood/shadscale/Indian ricegrass.

A plant species of special interest in this WSA (mentioned in the Special Features section) is *Eriogonum crosbyae* (Crosby's buckwheat), a newly discovered species. This plant is a candidate species for Federal listing as Threatened or Endangered and is located near Fish Fin Rim.

The vegetation composition and ecological status in the Pueblo-Lone Mountain portion of the WSA is in the mid- to late seral stage, and the South Steens and Beatys Butte portions of the WSA are in the mid-seral stage. The trend is static or upward in all three allotments, except for those areas in South Steens and Beatys Butte allotments that are proposed for vegetative manipulation projects. These areas are in early seral status and on a downward trend.

Wildlife

There is a poor distribution of water in the WSA, which has a major influence on wildlife during the warmer months, limiting deer and antelope use. Lack of thermal cover is also a major factor limiting summer deer use of the area. Antelope, as well as deer, winter in the south end of Catlow Valley.

Coyote Rim in the northern part of the WSA is heavily used by nesting raptors with three usually active golden eagle nests and seven inactive nests. One prairie falcon nest has been located on Coyote Rim. Other rims having heavy raptor use are in the southeastern corner, where there is usually one active prairie falcon nest and two active golden eagle nests. Six other inactive golden eagle nests have been located in this portion of the WSA. Other raptors nesting in the area include the great horned owl and American kestrel.

Chukars are found along Coyote Rim and other rimrock areas of the WSA. Most of the WSA is not good chukar habitat.

Common nongame wildlife species include coyote, black-tailed jackrabbit, least chipmunk, antelope ground squirrel, sage sparrow, Brewer's sparrow, horned lark, sage thrasher, western rattlesnake and gopher snake. Bush-tailed woodrat, canyon mouse and long-eared myotis (bat) may be found using cliff habitat found near Coyote Rim and other rough topography.

Kit fox, which is on the ODFW's List of Threatened Species, may range into the WSA.

Two wildlife guzzlers are located within the WSA.

Watershed

There are no perennial streams in the study area.

Livestock Grazing

The study area covers portions of three grazing allotments, two in BLM's Burns District and one in the Lakeview District. South Steens and Pueblo-Lone Mountain allotments are in the Burns District, while the Beatys Butte allotment is in the Lakeview District. Table 4 summarizes the existing livestock use in AUMs.

Existing livestock improvements include 16 reservoirs, 2 developed wells and 2 fences (totaling 31 miles).

Each of the 13 livestock operators use motor vehicles on 74 miles of ways and 25 miles of roads approximately 10 times per year for fence, well and reservoir inspection and maintenance, and to check on livestock and spread salt.

There are an estimated 1,360 AUMs of livestock forage associated with the Pueblo-Lone Mountain allotment portion of the WSA that are presently unavailable due to a shortage of needed water developments in the area. This forage is necessary to offset a proposed reduction in livestock use elsewhere within that allotment outside the WSA. The current estimated level of livestock grazing in the Pueblo-Lone Mountain, South Steens and Beatys Butte allotments does not affect forage production or the ecological status of the WSA.

Utility Corridor Routing

Both Pacificorp and the Bonneville Power Administration (BPA) have under long-term consideration the construction of a 500-kV power transmission line through a potential east-west utility corridor which would cross the northern half of the study area.

Recreation Use

Recreation use in the Basque Hills WSA is primarily oriented towards hunting. It is estimated that deer and antelope hunting both account for low visitor use. Chukar hunting does occur in some portions of the WSA, but it is not known how much use occurs. All hunting which occurs in the area is presumed to be vehicle-oriented. The study area currently receives little primitive recreation use. Overall recreation use in the WSA amounts to approximately 100+visitor days per year.

Local Personal Income

Livestock use at the current level of 6,576 AUMs and recreation use totaling 100 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $78,912 for livestock grazing, and $1,200 related to recreation use of the WSA, for an overall total of $80,112. The Statewide EIS volume discusses the term local personal income and how income figures have been derived.

4. Environmental Consequences

Introduction

This section discusses the environmental consequences of implementing each of the alternatives. Resources and activities not significantly affected by any of the alternatives are not discussed. The Statewide volume discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness: 141,410 acres
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

All of the WSA would be designated wilderness, and wilderness values within the entire 141,410 acres would be protected by legislative mandate. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. Special features, including raptor nesting habitat, a plant species of special interest and kit fox habitat would be protected.

Naturalness

The naturalness of the area's gently-rolling, sagebrush-covered hills and broad visual expanses interspersed with rimrocks would be slightly enhanced by the closure of 74 miles of ways and prohibition of motorized vehicle use amounting to less than 100 visitor days per year. Although the 25 miles of roads would remain open, the closure of ways and prohibition of off-highway vehicle use would improve the overall naturalness of the area by allowing the ways to naturally revegetate to an eventual unbroken sagebrush and grass landscape.

Use of heavy equipment approximately once every 10 years for maintenance of the 16 existing reservoirs and 2 wells would have little effect on revegetation of the ways.

Solitude

Opportunities for solitude provided by the broad expanses, gently-rolling hills and the large amount of acreage associated with this WSA would slightly improve with the closure of 74 miles of ways.

Maintenance of the existing 16 reservoirs and 2 wells would require the use of heavy equipment approximately once every 10 years for each facility. This maintenance activity would cause minor local impairment of solitude within the vicinity of these developments.

Primitive and Unconfined Recreation

The quality of and opportunities for participating in primitive recreation activities in the study area would be maintained or improved under this alternative. Improvements would be a result of eliminating vehicle use on the 74 miles of ways. However, the area does not provide any outstanding opportunities for primitive forms of recreation. Topographic features (aside from the vastness of acreage) are limited, vegetative diversity is lacking, and water sources are intermittent.

Special Features

Eliminating motorized vehicle use on the 74 miles of ways would reduce the potential for vehicles impacting the area's special features.

Conclusion: Wilderness designation of the entire 141,410 acres of public land in the Basque Hills WSA would result in the protection of existing wilderness values and enhancement of those values.

Impacts on Energy and Mineral Development

Wilderness designation would close 137,220 acres within the WSA to mineral entry. The 520 acres of private land and 4,190 acres of split-estate lands would remain open to mineral exploration and development.

Energy Development

No energy exploration and development is projected in the area due to the low potential for occurrence of these resources.

Conclusion: No impact to energy development is expected.

Mineral Development

Within the WSA, substantial exploration or mineral development is not projected due to the lack of direct geological evidence for mineral resources. Low interest in the area, as shown by a lack of mining claims and plans of operations filed for exploration, and no known deposits of sufficiently large ore bodies, indicate mineral development is unlikely both on public and private lands within the WSA boundary.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Under wilderness designation, vegetation dependent upon existing undeveloped environments would be maintained.

The 74 miles of ways, once closed to vehicle use, would naturally revegetate with forbs and grasses within two growing seasons. Sagebrush would invade these ways within five years.

Wilderness designation would not introduce any significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the Vegetation section of the Affected Environment, would not substantially change nor would the ecological status.

The plant species of special interest, *Eriogonum crosbyae* (Crosby's buckwheat), which is located in the vicinity of Fish Fin Rim, would not be subject to any projected management actions under this alternative.

Conclusion: Vegetative composition and ecological status would remain the same and the 74 miles of ways would naturally revegetate within five years.

Impacts on Wildlife

Wildlife habitat for a summer population of 100 deer and 100 antelope, and winter population of 200 deer and 200 antelope, would be maintained under wilderness designation. Adequate wildlife forage would be ensured in the preparation and implementation of livestock allotment management plans in order to meet ODFW management objectives.

Access to maintain the two wildlife guzzlers in the WSA would have to be on foot or by horseback. This would not be a problem for maintaining the one guzzler near the county road, but it would be a problem for maintaining the other guzzler, which lies more than 2 miles from the nearest open road. When substantial repairs are required, this guzzler would probably be abandoned. This would reduce water availability and habitat for chukars and some populations of small animals dependent on this water source. Populations of these small animals could slightly decline due to less water being available. Chukars would move to other water sources.

The closure of ways would have little impact on wildlife species due to the light vehicle use.

Conclusion: Wildlife habitat and populations would be maintained on 141,410 acres designated wilderness. One wildlife guzzler would likely be abandoned, causing small animal populations to decline slightly.

Impacts on Livestock Grazing

Livestock grazing would continue at the current level of approximately 6,576 AUMs within the portions of the three allotments located in the WSA. The seasons of use and distribution of AUMs for all three allotments would remain as shown in Table 4. Wilderness designation would preclude the allocation of an additional 8,6l5 AUMs of livestock forage from new projects that would likely be prohibited due to recurring maintenance needs utilizing vehicles.

Vehicle use for livestock management and facility inspection and light maintenance on 74 miles of ways would be precluded. This would result in some inconvenience and a slight additional expense to the 13 livestock operators. Annual inspection and maintenance of 31 miles of fence not accessible to open roads would be done on foot or by the use of riding and pack animals. Heavy equipment would be used once every 10 years to maintain the 16 existing reservoirs.

Conclusion: Livestock grazing use would remain at the current use level of approximately 6,576 AUMs. A potential allocation of an additional 8,6l5 AUMs of livestock forage from new projects would be foregone. Vehicle use for routine livestock management on 74 miles of ways would be precluded with some inconvenience and slight increase in cost to livestock operators.

Impacts on Utility Corridor Routing and Development

Under the all wilderness alternative, the proposed east-west utility corridor could not be located within the WSA. The alternative corridor location around the

WSA would be 4.4 miles longer. This would increase powerline construction costs by $1,201,200 to $1,686,520, depending on the type of line design. This would also increase annual maintenance and line load loss costs by some $1,540 to $3,872 (See the Statewide EIS volume for explanation of these figures).

Conclusion: The east-west corridor would be relocated outside of the WSA, adding 4.4 miles to the corridor length, with associated increased powerline construction and maintenance costs.

Impacts on Recreation Use

Except for the 25 miles of dead-end roads that would remain open under the all wilderness alternative, the entire 141,410 acres of the WSA would be closed to motorized recreation use, including 74 miles of ways. This closure would reduce vehicle-oriented recreation use in the WSA.

Primitive recreation would be expected to increase slightly. Vehicle-oriented recreation is expected to be displaced into other areas or to be partially substituted by primitive recreation. Some vehicle-oriented recreationists, primarily hunters, may continue to use the WSA, traveling by foot or horseback. It is estimated that reductions in hunting use would be minor due to continued access opportunities on the 25 miles of dead-end roads. Projected use patterns indicate that the current level of 100 visitor days per year would remain the same.

Conclusion: Recreation use would remain the same at the current level of 100 visitor days per year.

Impacts on Local Income

Livestock grazing would remain at 6,576 AUMs. Overall recreation use would remain at 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be no net change from the current level.

Conclusion: Annual local personal income generated from resource outputs in the WSA would remain at approximately $80,000.

Enhanced Wilderness

Recommended suitable for wilderness: 141,930 acres (assuming acquisition of 520 acres of private land)
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

The enhanced wilderness alternative would add 141,930 acres to the NWPS, assuming 520 acres of private lands could be acquired. In addition, the mineral estate on 4,190 acres of split-estate lands would be acquired. Closing the 25 miles of dead-end roads and 74 miles of ways would eliminate vehicle use in the entire area. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved over the entire area. Special features, including a newly discovered plant species, raptor nesting habitat and kit fox habitat would be protected.

Naturalness

This alternative would enhance the overall naturalness of the area's gently-rolling, sagebrush-covered hills, broad visual expanses and interspersed rimrocks slightly more than the all wilderness alternative by closing 25 miles of roads, as well as the 74 miles of ways. This alternative would also eliminate off-highway vehicle use and the resulting surface disturbance. The roads and ways would be allowed to naturally revegetate and would become less visible within the study area, thus enhancing the overall naturalness by providing an unbroken sagebrush and grass landscape.

Solitude

Opportunities to experience solitude, provided by the broad visual expanses, gently-rolling hills and the vast acreage associated with this WSA, would be similar to the all wilderness alternative. Solitude would be further enhanced by the closure of 25 miles of roads and the elimination of vehicle use in the WSA.

Periodic maintenance required for existing range improvements would cause a short-term, localized disturbance to solitude. Use of heavy equipment would be required for the maintenance of the 16 existing reservoirs and would be performed approximately once every 10 years for each reservoir.

Primitive and Unconfined Recreation

The quality of, and opportunities for participating in, primitive recreation activities under this alternative would be maintained or improved. Improvements would be a result of eliminating vehicle use of 74 miles of ways and 25 miles of existing dead-end roads. However, the area does not provide any outstanding opportunities for primitive forms of recreation. Topographic features (aside from the vastness of the acreage associated with this WSA) are limited, the vegetative diversity is lacking and water sources are very intermittent.

Special Features

Eliminating motorized vehicle use on the 74 miles of ways and 25 miles of roads within the WSA would eliminate existing, minor disturbance of special features.

Conclusion: Wilderness designation under this alternative would result in the protection of existing wilderness values and probable enhancement of these values on 141,930 acres (assuming acquisition of 520 acres of private land).

Impacts on Energy and Mineral Development

Under the enhanced wilderness alternative, 141,930 acres within the WSA, including 4,710 acres of private land and the mineral estate of split-estate lands, proposed for acquisition, would be withdrawn from mineral entry.

Energy Development

No energy exploration and development is projected in the area due to the low potential for occurrence of these resources in the WSA.

Conclusion: No impact to energy development is expected.

Mineral Development

Within the area designated wilderness, substantial exploration or development of mineral resources is not projected due to the lack of direct geological evidence for mineral resources. Low interest in the area, as shown by a lack of mining claims and plans of operations filed for exploration, and no known deposits of sufficiently large ore bodies, indicate that mineral development is unlikely both on public and private lands within the area designated wilderness boundary.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Under wilderness designation of the entire WSA, vegetation dependent upon existing, undeveloped environment would be maintained.

The 74 miles of ways and 25 miles of roads, once closed to vehicle use, would naturally revegetate with forbs and grasses within two growing seasons. Sagebrush would invade these ways within five years.

Wilderness designation would not introduce any significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the Vegetation section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid-seral stage overall.

The plant species of special interest, *Eriogonum crosbyae* (Crosby's buckwheat), which is located in the vicinity of Fish Fin Rim, would not be subject to any projected management actions under this alternative.

Conclusion: Vegetative composition and ecological status of all three allotments would remain unchanged. Seventy-four miles of ways and 25 miles of roads would naturally revegetate within five years.

Impacts on Wildlife

Wildlife habitat for a summer population of 100 deer and 100 antelope, and a winter population of 200 deer and 200 antelope, would be maintained under wilderness designation. Adequate wildlife forage would be ensured in the preparation and implementation of livestock allotment management plans in order to meet ODFW management objectives.

Access to maintain the two guzzlers located in the WSA would be on foot or horseback. This would not be a problem for maintaining the one guzzler near the county road, but it would be a problem for maintaining the other guzzler, which lies more than 2 miles from the nearest open road. When substantial repairs are required, this guzzler would be abandoned. This would reduce water availability and habitat for chukars and some populations of small animals dependent on this water source. Populations of these small animals could slightly decline due to less water being available. Chukars would move to other water sources.

The closure of 74 miles of ways and 25 miles of roads would have little impact on wildlife species due to the light vehicle use.

Conclusion: Wildlife habitat and populations would be maintained on 141,930 acres designated wilderness. One wildlife guzzler would be abandoned, causing small animal populations to decline slightly.

Impacts on Livestock Grazing

Livestock grazing use would be sustained at the current level of approximately 6,576 AUMs within the portions of the three allotments located in the WSA. The seasons of use and distribution of AUMs are as shown in Table 4. Wilderness designation would preclude the allocation of an additional 8,6l5 AUMs of livestock forage from new projects that would likely be prohibited due to recurring maintenance needs utilizing vehicles and impacts on wilderness values.

Vehicle use for livestock management and facility inspection and maintenance on 74 miles of ways and 25 miles of road would be precluded. This would result in some inconvenience and a slight additional expense to the 13 livestock operators. Annual inspection and maintenance of 31 miles of fence not accessible to open roads would be done on foot or by the use of riding and pack animals. Heavy equipment would be used once every 10 years to maintain the 16 existing reservoirs.

Conclusion: A potential allocation of an additional 8,6l5 AUMs of livestock forage from new projects would be foregone. Vehicle use for routine livestock management (about 10 trips per year) on 74 miles of ways and 25 miles of roads would be precluded with some inconvenience and a slight increase in cost to livestock operators.

Impacts on Utility Corridor Routing and Development

Under the enhanced wilderness alternative, the proposed east-west corridor could not be located within the WSA. The alternative corridor location around the WSA would be 4.4 miles longer. This would increase powerline construction costs by $1,201,200 to $1,686,520, depending upon the type of line design. Annual maintenance and line load loss costs would increase by some $1,540 to $3,872. (See Statewide EIS volume for explanation of these figures.)

Conclusion: The east-west utility corridor would be relocated outside of the WSA, adding 4.4 miles to the corridor length, with associated increased powerline construction and maintenance costs.

Impacts on Recreation Use

The enhanced wilderness alternative would eliminate vehicle-oriented recreation in the area. This would mostly affect hunting for deer and antelope. Some of the loss of visitor days from restrictions on vehicle-oriented hunting would be offset by increased use from hunters who do not use vehicles as a means of transportation in their hunting areas. Because existing use of the area for primitive recreation is limited, it is not expected that such use of the area would substantially increase. Any increase in primitive recreation use would not be sufficient to offset the reduction in vehicle oriented recreation. Projected use patterns indicate that the current level of 100 visitor days per year would remain the same over time.

Conclusion: Recreation use would remain the same at the current level of 100 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 6,576 AUMs. Overall recreation use would remain at 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be no net change from the current level.

Conclusion: Annual local personal income generated from resource outputs in the WSA would remain at approximately $80,000.

No Wilderness/No Action (Proposed Action)

Recommended suitable for wilderness: 0 acres
Recommended nonsuitable for wilderness: 141,410 acres

Impacts on Wilderness Values

Under the no wilderness/no action alternative, the entire 141,410 acres of public land would not be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation and the area's special features, including raptor nesting habitat, a plant species of special interest and kit fox habitat, would be subject to the effects of the projected management actions. Projected actions include construction of substantial range improvements, a wildlife habitat improvement project, continued recreational vehicle use and the possible development of the potential utility corridor.

Naturalness

All projected actions, including substantial range improvements, a wildlife habitat improvement project, continued vehicle use, and the possibility of an east-west utility corridor, would be allowed under the no wilderness alternative. These activities would alter naturalness to some degree by disturbing vegetation and changing existing land contours.

Continued vehicle use on the 25 miles of roads and 74 miles of ways would maintain the impact of vehicle tracks and usage upon naturalness on approximately 10,224 acres (7 percent of the WSA).

Construction of all projected livestock developments, including 14 reservoirs, 3 wells, 40 miles of pipeline, 13 miles of fence, 2 water storage tanks and 22,530 acres of brush control and seeding, and the accompanying changes in livestock use patterns, would directly impair naturalness on approximately 22,616 acres in specific locations and visually influence an additional 53,515 acres.

The allocation of an additional 8,615 AUMs would increase trampling around water sources and increase utilization of forage, resulting in a more grazed appearance, with less residual ground cover. These effects would be greater in the Pueblo-Lone Mountain allotment portion of the WSA, where the I,360 additional AUM allocation involves currently ungrazed forage.

Construction of the wildlife habitat improvement project, which is a brush control and seeding project on 7,000 acres, would occur under this alternative. This project would occur in the same vicinity as the livestock vegetative manipulation projects and would directly impair naturalness on 7,000 acres and indirectly influence an additional 13,000 acres.

The proposed east-west utility corridor in the northern portion of the WSA would be allowed under this alternative and would affect the area's overall naturalness. Because of the relatively level and open terrain, transmission lines could be viewed from long distances. Powerline construction along 16.5 miles of potential utility corridor would directly impair naturalness on 72 acres through surface disturbance and visually influence approximately 4,950 acres of the WSA.

Solitude

Opportunities for solitude would be impaired as a result of continued vehicle use and access, development activities associated with the extensive range improvement projects, and the wildlife habitat improvement project, and construction activities in the potential east-west utility corridor within the northern portion of the WSA.

Continued vehicle use of the existing 25 miles of roads and 74 miles of ways, as well as associated human activity, would limit and impair the opportunity to experience solitude within the vicinity of roads and ways.

During the construction of all the proposed range and wildlife improvements, the ability to experience solitude would be severely limited. Periodic maintenance of existing and developed range and wildlife improvements would also cause a short-term disturbance to solitude. Solitude opportunities in the rest of the study area would remain unchanged.

Primitive and Unconfined Recreation

Under this alternative, primitive recreation opportunities would be subject to continued, minor disturbance by existing vehicle access routes and use. Primitive recreation opportunities would be further disturbed by proposed and developed range and wildlife projects. However, the area does not provide for any outstanding opportunities for participating in primitive forms of recreation. The impacts of proposed developments on primitive recreation opportunities would not be substantial.

Special Features

The newly-discovered plant species, raptor nesting habitat and kit fox habitat identified as special features of the area would be subject to disturbance and effects from projected development of other resources and the accompanying changes in land use patterns. Sagebrush control would reduce the abundance of black-tailed jackrabbits and many small mammals which are key prey species for raptors and kit fox. Habitat for raptors and kit fox would be degraded by sagebrush control projects. Monitoring and mitigation measures could minimize or eliminate some of these impacts.

Conclusion: In the absence of wilderness designation, projected activities would directly impair wilderness values on 29,688 acres and would indirectly influence an additional 71,500 acres, with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

The entire 141,410 acres of the WSA would be open to mineral exploration and development.

Energy Development

No energy exploration and development is projected in the area due to the low potential for occurrence of these resources in the WSA.

Conclusion: No impact to energy development.

Mineral Development

Within the WSA, substantial exploration or mineral development is not projected due to the lack of direct geological evidence for mineral resources. Low interest in the area by the minerals industry (as evidenced by a lack of mining claims and plans of operations filed for exploration) and no known deposits of sufficiently large ore bodies indicate that development within the WSA is unlikely both on public and private lands within the WSA boundary.

Conclusion: No impact to mineral development.

Impacts on Vegetation

Under this alternative, the proposed livestock and wildlife brush control and seeding projects, affecting 29,530 acres, would remove sagebrush from the sagebrush/bunchgrass community, resulting in reduced vegetation diversity. The addition of crested wheatgrass (a non-native species) to that community would create a bunchgrass/crested wheatgrass community.

All proposed range improvements would be constructed (14 reservoirs, 3 wells, 40 miles of pipeline, 13 miles of fence and 2 water storage tanks) under this alternative, directly disturbing 86 acres of surface area and eliminating corresponding vegetative cover. Construction of a 500-kV powerline along 16.5 miles of the potential corridor on the northern portion of the WSA would result in 72 acres of removed vegetation.

The projected range improvements would alter grazing patterns and the distribution of livestock, thus reversing a downward trend in the ecological status of the vegetation in the Pueblo-Lone Mountain portion of the WSA. This improvement in grazing use would also maintain forage production and ecological status of the vegetation at the increased levels of use in the South Steens and Beatys Butte portions of the WSA, not only in the grazed areas, but in the ungrazed areas where new grazing would take place.

The Federal candidate plant species, *Eriogonum crosbyae*, would receive the same protection as Federally-listed threatened or endangered species. Projected activities would not be in the vicinity of this plant species.

The 74 miles of ways and 25 miles of roads would remain open to use by vehicles and would not revegetate.

Conclusion: Vegetation would be altered on approximately 29,530 acres in the WSA.

Impacts on Wildlife

Adequate wildlife forage would be ensured in the preparation and implementation of livestock allotment management plans to provide forage for antelope. ODFW has not set management objectives for antelope. Antelope forage preferences differ markedly from those of cattle. Competition for forage between cattle and antelope is expected to be slight or none.

Under this alternative, the brush removal project to provide habitat for increased antelope numbers would be developed and maintenance of the two existing wildlife guzzlers would continue by vehicular means. The burning and reseeding of 7,000 acres would provide an herbaceous cover preferred by antelope. This action would further increase antelope numbers in the WSA. Proposed livestock improvements would also be allowed under this alternative and could result in improved habitat and increased populations of some wildlife (primarily antelope) due to increased water availability and changes in forage types. Populations of many species of nongame wildlife, including kit fox and raptors, would be moderately reduced due to the conversion of sagebrush to crested wheatgrass and to the corresponding change in cover and forage. There would be no substantial impacts to other wildlife populations in the study area.

Conclusion: Antelope populations would likely increase. Nongame wildlife populations, including those of kit fox and raptors, would be moderately reduced on 29,530 acres of vegetation conversion.

Impacts to Livestock Grazing

Livestock grazing use would increase from 6,576 AUMs to 15,191 AUMs in the WSA.

Range improvements for the portion of all three allotments located within the WSA would be constructed and would include a total of 14 reservoirs, 3 wells, 40 miles of pipeline, 13 miles of fence, 2 water storage tanks and 22,530 acres of brush control and seeding. In the WSA's portion of the Pueblo-Lone Mountain allotment, 9 reservoirs and 21 miles of pipeline would be constructed to make previously unavailable forage (l,360 AUMs) available for livestock. In the WSA's portion of the South Steens allotment, 2 reservoirs, 3 wells, 16 miles of pipeline, 8 miles of fence, 2 water storage tanks and 14,060 acres of brush control and seeding would produce 4,850 AUMs of additional forage; and in the WSA's portion of the Beatys Butte allotment, 3 reservoirs, 3 miles of pipeline, 5 miles of fence and an 8,470 acre brush control and seeding would produce 2,405 AUMs of additional forage. The increased forage production could increase grazing use by 8,615 total AUMs.

Maintenance of facilities requiring the use of heavy equipment would be done every 10 years for each existing and developed reservoir and every five years for pipelines. Vehicle use for livestock management would continue on 25 miles of existing roads and 74 miles of existing ways.

Conclusion: An additional allocation of 8,6l5 AUMs to livestock use would be realized.

Impacts on Utility Corridor Routing and Development

The no wilderness alternative would allow for the location of a utility corridor across 16.5 miles of the northern portion of the WSA as proposed. Costs for construction and annual maintenance of the proposed 500-kV powerline would not be increased due to the shorter route across the WSA.

Conclusion: The proposed east-west utility corridor would be designated in the northern portion of the WSA and the 500-kV powerline could be constructed.

Impacts on Recreation Use

Vehicle-oriented recreation would continue within the WSA on the 74 miles of ways and 25 miles of dead-end roads. Additionally, hunting use of the area would increase from increased antelope populations resulting from additional habitat and water sources provided by livestock and wildlife improvement projects. A net increase in overall recreation use (mainly due to hunting) in the study area would occur. Projected use patterns indicate that the current level of 100 visitor days per year would increase over time, to 200 visitor days per year.

Conclusion: Recreation use would increase from the current level of 100 visitor days per year to approximately 200 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would increase by 8,615 AUMs. Overall recreation use would increase by 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $104,580 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by approximately $105,000.

Unavoidable Adverse Impacts of the Proposed Action

Under the Proposed Action (No Wilderness/No Action), projected range improvements involving 14 reservoirs, three wells, 40 miles of pipeline, 13 miles of fence, 2 water storage tanks and 22,530 acres of brush control would be constructed. The wildlife habitat project, involving a 7,000 acre burn and seeding, would also be implemented. These projects would directly impair wilderness values on 29,616 acres and would visually influence an additional 66,500 acres. The future development of an east-west utility corridor would impair wilderness values on the northern portion of the WSA with surface disturbing construction (72 acres) and additional visual impairment (4,950 acres).

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity

Under the Proposed Action, existing short-term uses would continue. Future development options, including substantial range improvements, a wildlife habitat enhancement project, as well as the development of an east-west utility corridor across the northern portion of the WSA, would remain open. The long-term ability of the area to produce wilderness values would be directly lost on 29,688 acres of the WSA due to surface disturbance related to the substantial range improvement and wildlife habitat enhancement projects and powerline development. This would also visually influence an additional 71,500 acres. Further declines could occur from other uses over the long term.

Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, substantial range improvements would result in an irreversible commitment of wilderness values on 22,616 acres directly. The wildlife habitat improvement project would directly affect 7,000 acres. The future development of an east-west utility corridor would directly affect an additional 72 acres in the northern portion of the study area. These projects would also visually influence approximately 71,500 acres.

5. Wilderness Manageability and Rationale for the Proposed Action

Manageability of the Area as Wilderness

The Basque Hills WSA would be manageable under the all wilderness alternative, although there might be some manageability problems associated with the split-estate and private land within the study area.

Another problem which could affect the management of the area as wilderness is the presence of a large amount of adjacent private land along the northern boundary. Most of this land is not marked or otherwise recognizable on the ground because the boundaries follow legal subdivisions. Problems with controlling recreational use in this area could occur. This would not be a substantial problem; recreational use in the WSA would be limited and would occur away from this boundary.

Rationale for the Selection of the Proposed Action

The no wilderness/no action alternative was selected as the proposed action to allow for intensive range developments, powerline construction within a utility corridor across the study area and the implementation of a wildlife habitat improvement project.

The area is relatively free of unnatural developments leaving it in a natural condition and it offers outstanding opportunities for solitude. However, it offers limited opportunities for primitive types of recreation and has few special wilderness features. The opportunity for solitude within this area of over 140,000 acres is the dominant attribute of the WSA.

There are opportunities in the Basque Hills area to improve the capacity of the rangeland for livestock use through better distribution of water, subdividing the area for improved management purposes and vegetative manipulations such as seedings. Under wilderness designation, these opportunities would be foregone.

If the area were designated wilderness, the opportunity to construct a major east-west utility corridor (power/transmission lines) across the northern end of the area would be foregone. Wilderness designation of the WSA would require that any powerline in the proposed east-west corridor be routed around the area, thus increasing overall costs.

6. Summary and Analysis of Public Comments

Following is a summary of public comments specific to this WSA concerning adequacy of the analysis in this appendix and responses to those comments. These comments were received both in writing and oral testimony at public hearings during the comment periods for the 1985 Draft EIS and the 1987 Supplement to the Draft EIS. Comments concerning the BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning statewide issues and analysis are addressed in the Statewide Volume EIS.

Comment: All wilderness alternative will protect water shrew and pika. **Response:** These species are not located within the study area. Table 3-2 in the Statewide volume of the Draft EIS was in error.

Comment: Consider an alternative that would designate as wilderness a combination of the Basque Hills and Spaulding WSAs with all of the land between them. **Response:** Combining Basque Hills WSA with Spaulding WSA and the lands between the two WSAs is not analyzed under the enhanced wilderness alternative. The road separating the two WSAs provides access for livestock users, private landowners, recreationists and BLM personnel. In addition, combining the study areas would not significantly improve the manageability or wilderness qualities of any WSA. See Section 2, Description of the Alternatives, for a discussion of alternatives considered but not analyzed in detail in this EIS.

Comment: The utility corridor is not needed since plans for it are very long term and it dead-ends without reaching a reasonable point of termination. **Response:** As stated in Chapter 2 of the Statewide Volume, under Utility Corridors and Facility Sites, potential utility corridors were identified using the 1980 Western Regional Corridor Study. Both Pacificorp (through Pacific Power & Light Company) and Bonneville Power Administration (BPA) have this particular corridor under long-term consideration. Since wilderness designation is considered to be a long-term action, intended to preserve wilderness values into perpetuity, potential conflicts with other long-term resource values and uses are appropriate considerations for a wilderness study. The appearance of dead-ending on the Statewide Utility Corridor Map is a result of a decision to map these potential corridors only to the point where potential conflicts with possible wilderness designation exist. Termination points represent areas where the corridor could extend in any of several directions to reach planned destinations without further conflicts with wilderness study areas in Oregon.

Table 1. Summary of Proposed Management Under Each Alternative, Basque Hills WSA (OR-2-84)

Proposed Management	All Wilderness	Enhanced Wilderness	No Wilderness/ No Action
Acres Designated as Wilderness	141,410	141,410	0
Acres Closed to ORVs by Wilderness Designation	141,410	141,410	0
Miles of Roads Closed	0	25	0
Miles of Ways Closed	74	74	0
Acres of Full Fee Estate Acquired[1]	0	520	0
Acres of Split-Mineral Estate Acquired[2]	0	4,190	0
Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation	137,220	137,220	0
Structural Livestock Projects Developed:			
Reservoirs & Waterholes (numbers)	0	0	14
Wells (number)	0	0	3
Pipelines (miles)[3]	0	0	40
Fences (miles)	0	0	14
Storage Tanks (number)	0	0	2
Vegetative Manipulation for Livestock: Brush Control (acres)	0	0	22,530
Increased Livestock Forage Allocation from Projects (AUMs)	0	0	8,615
Vegetative Manipulation for Wildlife: Brush Control with seeding (acres)	0	0	7,000
Miles of Utility Corridor Developed in WSA	0	0	16.5
Miles added to Potential Utility Corridors	4.4	4.4	0

[1] Upon acquisition, these additional lands would be incorporated into the wilderness area, closed to vehicle use, and withdrawn from mineral location and leasing.

[2] Upon acquisition of mineral estate, these lands would be withdrawn from mineral location and leasing.

[3] Includes installation of five "bottomless" troughs.

Table 2. Summary of Environmental Consequences of Alternatives, Basque Hills WSA (OR-2-84)

Resource or Activity	All Wilderness	Enhanced Wilderness	No Wilderness/No Action (Proposed Action)
Wilderness Values	Wilderness designation of the entire 141,410 acres of public land in the Basque Hills WSA would result in the protection of existing wilderness values and enhancement of those values.	Wilderness designation would result in the protection of existing wilderness values and probable enhancement of these values on 141,930 acres (assuming acquisition of 520 acres of private land).	In the absence of wilderness designation, projected activities would would directly impair wilderness values on 29,688 acres and would indirectly influence an additional 71,500 acres, with further declines from other potential uses over the long term.
Energy and Mineral Development	No impact to energy or mineral development is expected.	No impact to energy or mineral development is expected.	No impact to energy or mineral development.
Vegetation	Vegetative composition and ecological status would remain the same and the 74 miles of ways would naturally revegetate within 5 years.	Vegetative composition and ecological status of all three allotments would remain unchanged. Seventy-four miles of ways and 25 miles of roads would naturally revegetate within 5 years.	Vegetation would be altered on approximately 29,530 acres in the WSA.
Wildlife	Wildlife habitat and popultions would be maintained on 141,410 acres designated wilderness. One wildlife guzzler would likely be abandoned causing small animal populations to decline.	Wildlife habitat and populations would be maintained on 141,930 acres designated wilderness. One wildlife guzzler would be abandoned causing small animal populations to decline.	Antelope populations would likely increase. Nongame wildlife populations, including those of kit fox and raptors, would be moderately reduced on 29,530 acres of vegetation conversion.
Livestock Grazing	Livestock grazing use would remain at the current level of approximately 6,576 AUMs. A potential allocation of an additional 8,615 AUMs of livestock forage from new projects would be foregone. Vehicle use for routine livestock management on 74 miles of ways would be precluded with some inconvenience and slight increase in cost to livestock operators.	A potential allocation of an additional 8,615 AUMs of livestock forage from new projects would be foregone. Vehicle use for routine livestock management (about 10 trips per year) on 74 miles of ways and 25 miles of roads would be precluded with some inconvenience and a slight increase in cost to livestock operators.	An additional allocation of 8,615 AUMs to livestock use would be realized.
Utility Corridor Routing and Development	The east-west corridor would be relocated outside of the WSA, adding 4.4 miles to the corridor length, with associated powerline construction and maintenance cost.	The east-west corridor would be relocated outside the WSA, adding 4.4 miles to the corridor length, with associated powerline construction and maintenance cost.	The proposed east-west utility corridor would be designated in the northern portion of the WSA and the 500 kV powerline would be constructed.
Recreation Use	Recreation use would remain the same at the current level of 100 visitor days per year.	Recreation use would remain the same at the current level of 100 visitor days per year.	Recreation use would increase from the current level of 100 visitor days per year to approximately 200 visitor days per year.
Local Personal Income	Annual local personal income would remain at approximately $80,000.	Annual local personal income would remain at approximately $80,000.	Annual local personal income would increase by approximately $105,000.

Table 3. Classification of Energy and Mineral Potential, Basque Hills WSA (OR-2-84)

Commodity	Area	Level of Potential	Level of Certainty
Metals(mercury, copper, gold)	Entire WSA	M	A
Geothermal	Part of WSA	L	B
	Part of WSA	O	B
Uranium/Thorium	Entire WSA	O	A
Coal	Entire WSA	L	C
Oil/Gas	Entire WSA	L	B
Tar Sands/Oil Shale	Entire WSA	O	C
Limestone	Entire WSA	O	A
Bentonite	Entire WSA	L	A
Diatomite	See Map 4	M	A
	Rest of WSA	L	A
Zeoloites	Entire WSA	O	A

Legend:

Level of Potential

O - No indication for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Moderate potential for accumulations of energy/mineral resource
H - High potential for accumulations of energy/mineral resource

Level of Certainty

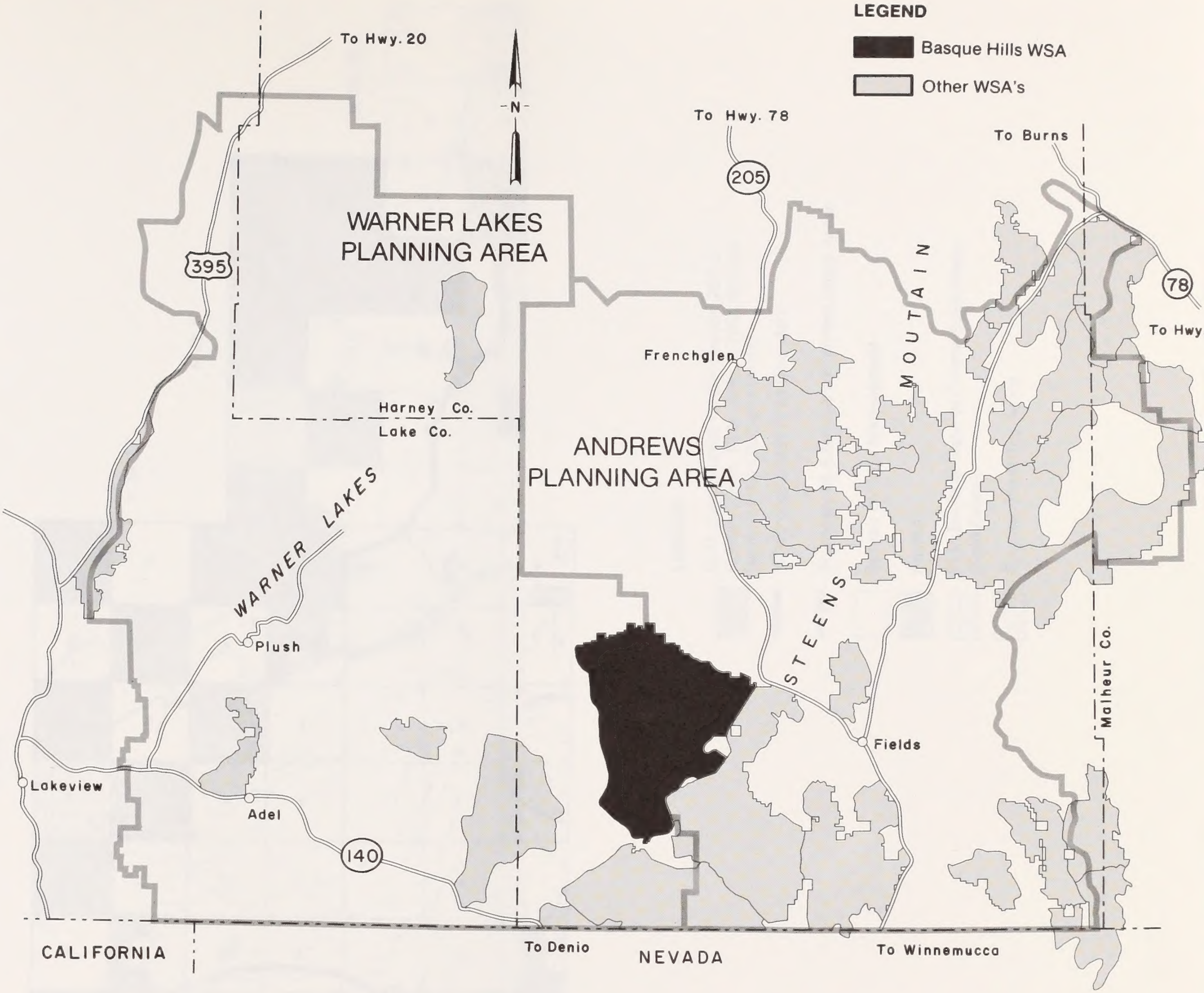
A - Insufficient data or no direct evidence
B - Indirect evidence available
C - Direct evidence but quantitatively minimal
D - Abundant direct and indirect evidence

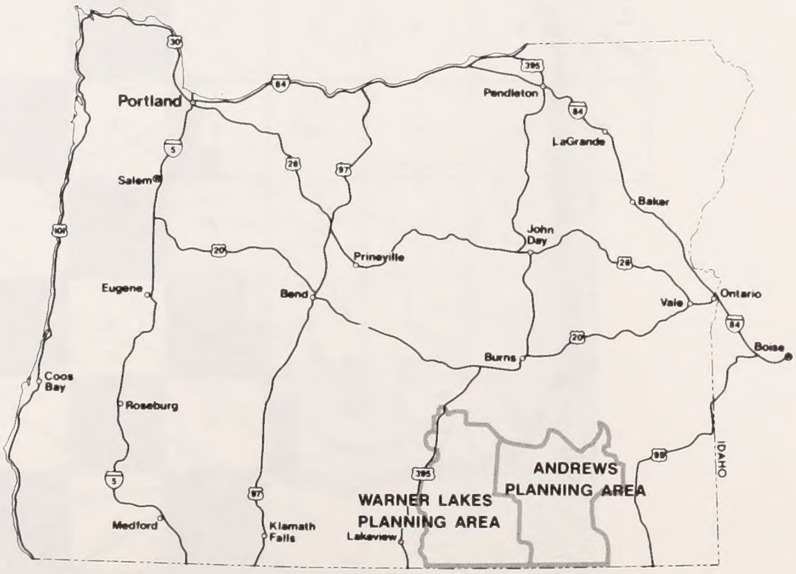
Table 4. Existing Livestock Use, Basque Hills WSA (OR-2-84)

Grazing Allotment	Licensed AUMs in Allotment	Period of Use	Percent of Allotment in WSA	Current Estimated Use in WSA (AUMs)
South Steens (No. 6002)	23,681	04/16-02/28	18	1,406
Pueblo-Lone Mtn. (No. 6020)	20,897	12/01-02/28	9	1,420
Beatys Butte (No. 0600)	27,892	04/01-06/30	14	3,750
Totals	72,470			6,576

Table 5. Effects of Alternatives on Local Personal Income, Basque Hills WSA (OR-2-84) (1981 price levels)

Item	Unit of Measure	All Wilderness	Enhanced Wilderness	No Wilderness/ No Action
CHANGES IN RESOURCE OUTPUTS				
Livestock Grazing	AUMs	No Change	No Change	+8,615
Recreation Use	RVD	Negligible	Negligible	+100
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES				
Livestock Grazing	$	0	0	+103,380
Recreation Use	$	0	0	+1,200
Total	$	0	0	+104,580





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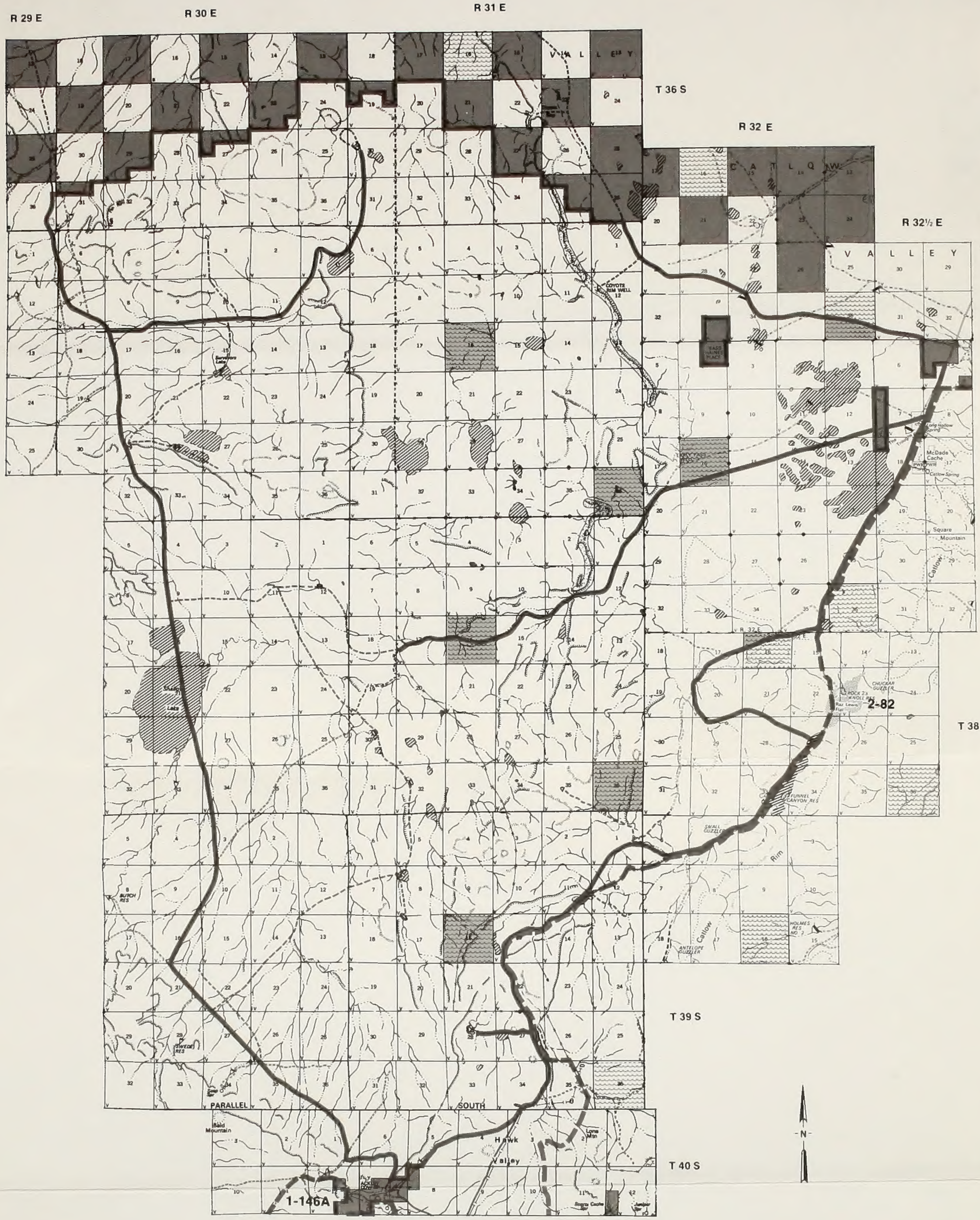
Basque Hills WSA
OR-2-84

LOCATION MAP

10 0 10 MILES

MAP 1



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Basque Hills WSA
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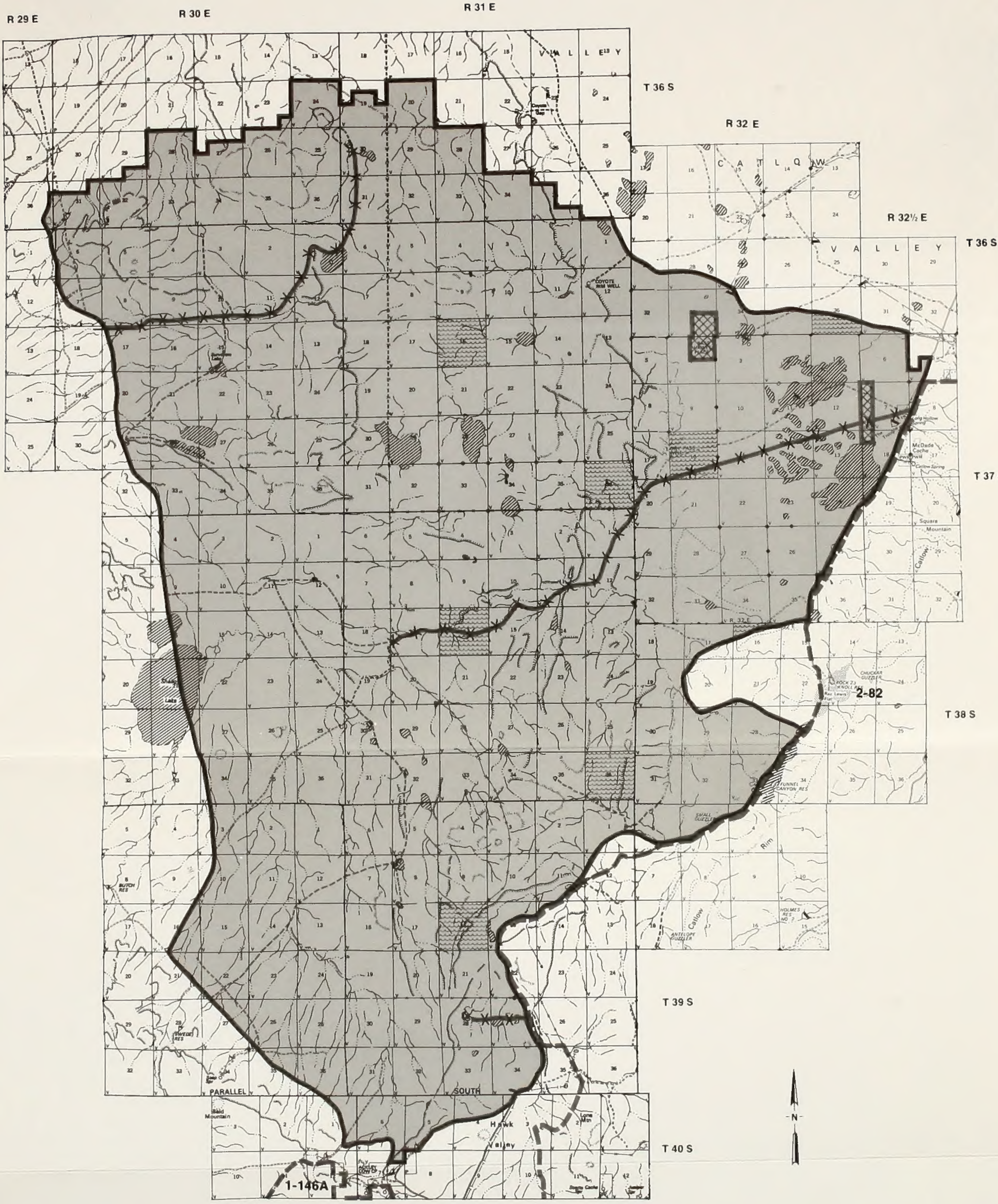
LAND OWNERSHIP

1 0 1 2 MILES

LEGEND

- ▨ BLM Land Studied Under Section 202 of FLPMA (Other BLM Land in WSA Studied Under Section 603 of FLPMA)
- ━ Wilderness Study Area Boundary
- ╍ Boundary of Adjacent Wilderness Study Areas
- ☐ Bureau of Land Management
- ■ Private
- ▤ BLM Surface-State or Private Subsurface (Split Estate)
- ▒ **Raptor Nesting Area**

MAP 2



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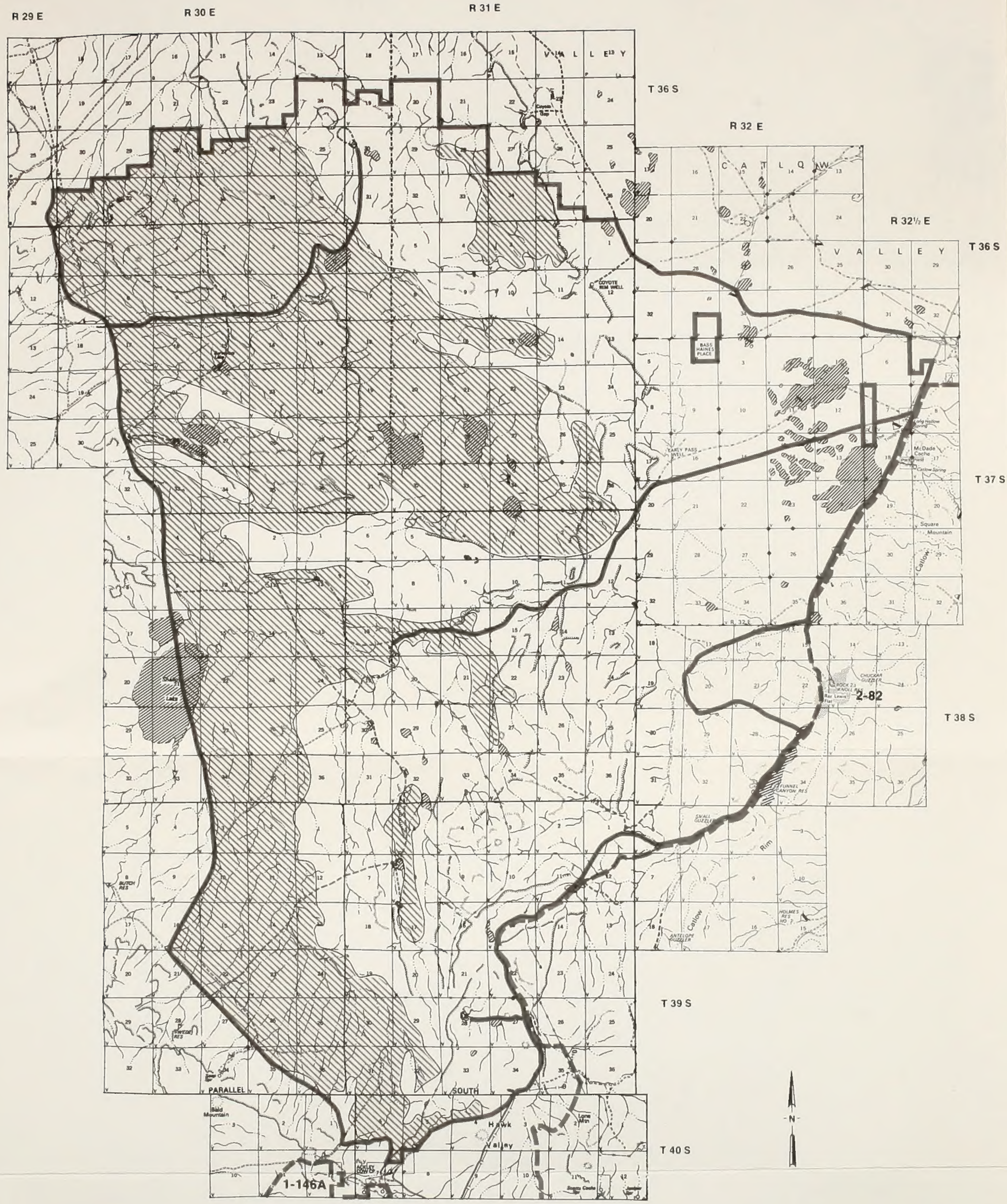
ENHANCED ALTERNATIVE

1 0 1 2 MILES

- ▬ Wilderness Study Area Boundary
- ╍ Boundary of Adjacent Wilderness Study Areas
- ▭ Recommended Suitable for Wilderness
- ▩ Non-Federal Land within Recommended Wilderness
- ▤ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness
- ✕✕ Recommended Road Closure

MAP 3



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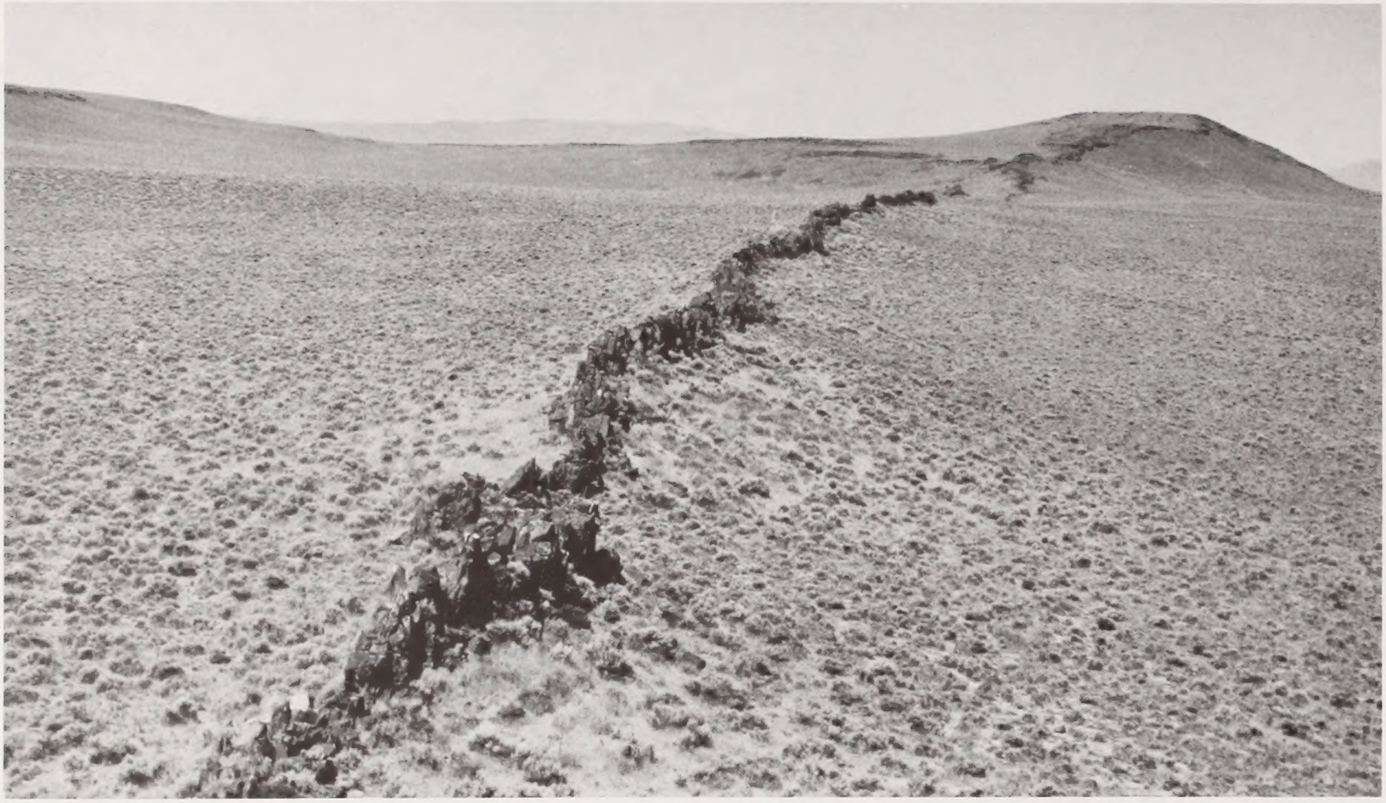
MODERATE OR HIGH POTENTIAL MINERAL OR ENERGY RESOURCES

1 0 1 2 MILES

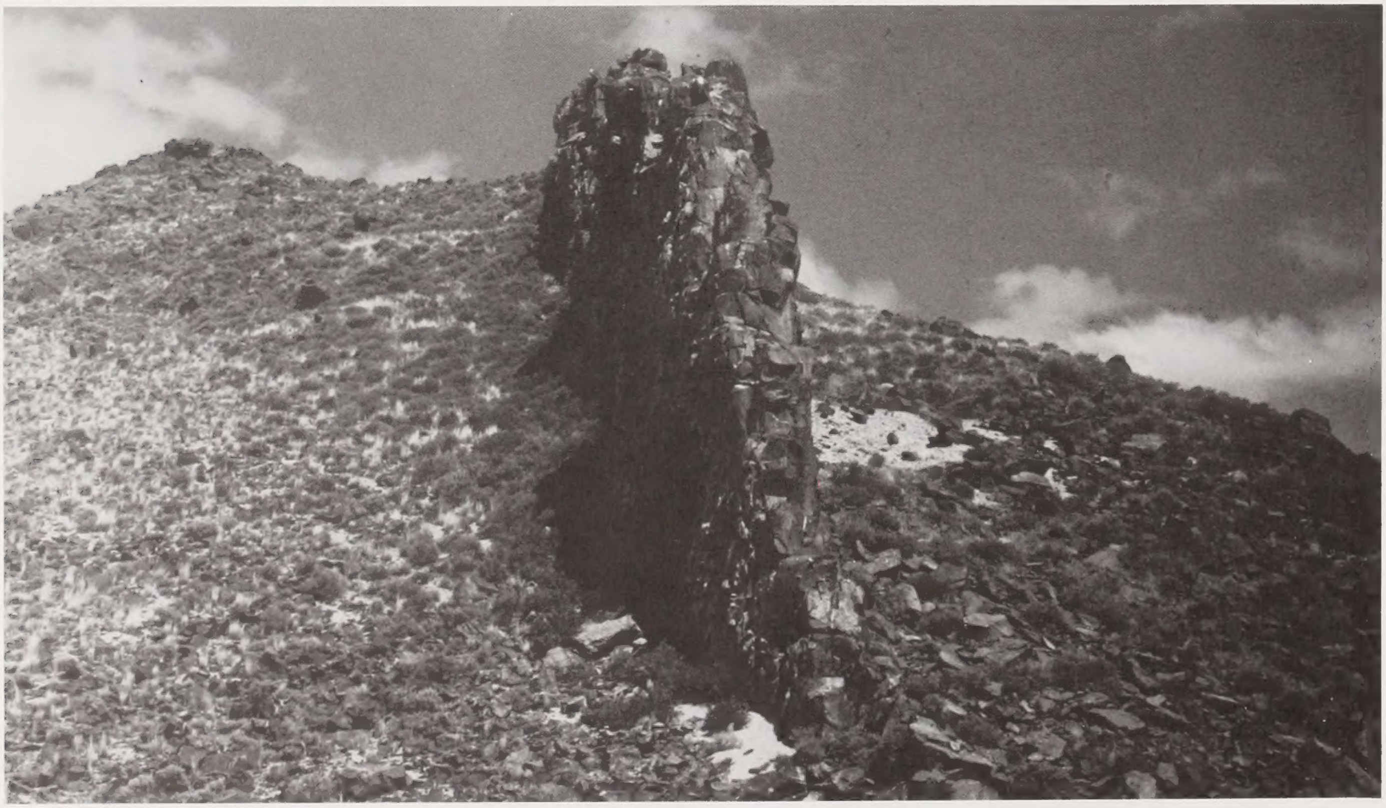
Entire WSA:
Moderate Potential
(MA) for Mercury, Copper and Gold

▨ **Moderate Potential**
(MA) for Diatomite

MAP 4



Basque Hills WSA, OR-2-84. Aerial photo of Fish Fin Rim in the north central portion of the area looking west. The area is recommended as suitable for wilderness under the enhanced and nonsuitable under the proposed action (no wilderness/no action) alternative. August 1983.



Basque Hills WSA, OR-2-84. Fish Fin Rim on the northwestern corner of the study area. Within the area suitable under the enhanced and nonsuitable under the proposed action (no wilderness/no action) alternative. A large monolithic rock outcropping, this jagged feature rises from a hillside to a height of 30 to 50 feet. May 1981.

Appendix to the Wilderness Environmental Impact Statement for Oregon

High Steens (OR-2-85F) and Little Blitzen Gorge (OR-2-86F) WSAs

1. Introduction

General Description of the Study Area

The High Steens and Little Blitzen Gorge Wilderness Study Areas (WSAs) are located approximately 60 miles southeast of Burns in Harney County. The WSAs are 20 miles east of Frenchglen and Oregon State Highway 205, the nearest highway (see Map 1).

The High Steens WSA contains 69,740 acres of public land (see Map 2), including 1,255 acres of split-estate land. In addition, the study area contains inholdings of private land totaling 2,165 acres. The area is long and somewhat narrow (20 miles by 9 miles), extending north and south along the length of Steens Mountain.

The Little Blitzen Gorge WSA contains 9,400 acres, all of it public land. It, too, is long and narrow, averaging 8 miles in length and 2 miles in width. The Little Blitzen Gorge is oriented east to west, as it follows a westward flowing drainage from the top of the mountain.

The boundaries of the two study areas are formed by a combination of private land and BLM low standard dirt roads. Both study areas are bordered for 14 miles by the Steens Mountain Loop Road, which is a standard gravel road. The High Steens WSA is on the east side of the road or the “outside” of the loop and the Little Blitzen Gorge WSA is on the west side of the road, or the “inside’ of the loop. The Steens Mountain Loop Road was constructed, and is maintained, by BLM and receives substantial use, especially in the upper elevations during the summer months, by sightseers and other recreationists who use it as access to reach the backcountry. The Little Blitzen Gorge is an integral part of Steens Mountain but, because of the placement of the road, it is the only major gorge that is not at least partially within the High Steens WSA. In addition to being physically similar to the other gorges on the mountain, the Little Blitzen Gorge is also a major recreation attraction and provides one of the prominent views from the main ridge of Steens Mountain.

A portion of the eastern boundary of the High Steens WSA is formed by a section of a county road, which is a standard gravel road located along the base of the mountain.

Also forming part of the boundary in the High Steens WSA are 10 dead-end low standard dirt roads totaling 15 miles. Three of these roads lead to State and private lands which actually form part of the WSA boundary, but are surrounded by public land. These parcels include two segments of private land totaling 920 acres, and one parcel of State land totaling 430 acres.

The High Steens and Little Blitzen Gorge WSAs contain a variety of physical features which are the result of vulcanism, faulting, glaciation and erosional processes. The two WSAs lie atop the high, main ridge of Steens Mountain, the highest mountain in southeastern Oregon.

There are several prominent physical features within the High Steens WSA. Throughout its entire length, the study area includes the high, main ridge of the mountain. Near the central portion of the study area is the summit, which reaches a height of 9,733 feet. This point is actually located on a parcel of State land which forms part of the study area’s boundary line. The highest point in the study area on public land is only 3 feet lower, and located 2 miles to the north, at the Steens Mountain overlook.

From the top of the ridge, the east side of the mountain drops rapidly into the Alvord Desert basin. The elevation difference along this eastern face of the mountain is generally greater than 4,000 feet. At one point, however, the elevation difference is as much as

5,300 feet within 3.5 miles. It is along the eastern boundary that the High Steens WSA reaches its lowest elevation of 4,080 feet.

The eastern portion of the mountain is deeply carved by numerous drainages and is characterized by steep, rugged, rocky escarpments and ridgelines. Ten drainages on this eastern slope originate from spring flows and nearly perennial snow fields near the mountain's summit. From north to south these drainages include Mann, Castle Rock, Little McCoy, Mosquito, Willow, Cottonwood, Big Alvord, Little Alvord, Pike and Indian Creeks. Glacial action has carved portions of the upper ends of many of these drainages, leaving small U-shaped basins with meadows of lush vegetation at high elevations along the eastern slope.

West of the Steens ridge, in the High Steens WSA, is the more gentle, western-sloping portion of the Steens Mountain fault block. Although major portions of the study area contain this gently-rolling high plateau, much of this area has been deeply cut by glaciers and huge U-shaped glaciated gorges are the dominant features of the landscape.

Kiger Gorge, the largest and perhaps the most well-known of these gorges, lies on the northern end of the study area. Averaging over 1 mile from canyon rim to canyon rim, this gorge reaches a depth of more than 2,000 feet. The steep, rugged, rocky canyon walls which surround the gorge on three sides slope abruptly to the valley floor where Kiger Creek drains the area to the north. Much of the canyon bottom is privately-owned land.

Four other major gorges also dominate the upper elevations of the High Steens WSA. Wildhorse and Little Wildhorse Creeks drain the study area to the south, while Big Indian Creek and Little Indian Creek drain the area in a westerly direction.

The northwestern and southwestern portions of the WSA are generally flat to gently-rolling areas, which is typical of the western slope of Steens Mountain.

The Little Blitzen Gorge WSA is dominated by one major feature, the deep canyon of Little Blitzen Gorge. One of the six major glaciated drainages on the mountain, it begins just west (less than 0.25 mile) of the Steens Mountain ridgeline at an elevation of 9,200 feet. Like the other gorges, the Little Blitzen Gorge is U-shaped and is characterized by towering, rocky canyon walls around the perimeter on three sides, and thick vegetation in portions of the canyon bottom. The gorge averages about 1 mile in width and ranges from 800 to 1,200 feet in depth.

The Little Blitzen River, which drains the area in a westerly direction, is a perennial stream fed by numerous springs and contains several waterfalls. The lowest elevation in this WSA (5,400 feet) occurs along the river where it leaves the study area on the western boundary.

Above the rim of the gorge on the north and south, the study area contains portions of the gently sloping western plateau of Steens Mountain. Within these parts of the study area are a few scattered perennial ponds and several small, spring-fed drainages which flow into the gorge.

Both study areas contain a wide variety of vegetation, largely due to the extreme differences in elevation. Some species are widely distributed, while others are restricted to small, isolated areas. In both study areas, riparian vegetation, including cottonwood trees and groves of aspen, occurs within most of the drainages and near springs. Grasses and alpine wildflowers are dominant near the summit and on the more gentle, western-facing slopes.

Sagebrush occurs throughout both study areas. Mountain mahogany and juniper occur on the very steep, rocky slopes, such as the side walls of the gorges, or in the steep drainages on the eastern side of the mountain.

Interrelationships

The two study areas are adjacent to three other WSAs. On the east, the High Steens WSA is separated from the Alvord Desert WSA (OR-2-74) by a segment (less than 1 mile) of a county road, which runs from the Folly Farm area (State Highway 78 on the north end) to Fields and on to Denio. This is a major access route in the county, serving a wide variety of users. A notable interrelationship between the High Steens WSA and Alvord Desert WSA is that the former provides one of the primary views of the Alvord Desert from the summit of Steens Mountain.

On the west, the High Steens WSA is separated from the South Fork of the Donner und Blitzen River WSA (OR-2-85G) by a road maintained by BLM and livestock operators. This road serves private landowners, BLM personnel and hunters, as well as livestock operators.

On the northwest, a road also separates the Little Blitzen Gorge WSA from the Blitzen River WSA (OR-2-86E) along a mile of its length. The road serves as access to private lands along the north side of the gorge.

The Steens Mountain Recreation Lands cover all of the public lands within the Little Blitzen Gorge WSA, and most of the lands in the High Steens WSA. This area was designated by BLM in 1971, in cooperation with local groups and government entities, as well as private landowners, to manage the area under a multiple-use concept while protecting the existing natural condition of the mountain. Only a small amount of land on the southern perimeter of the High Steens study area is not included within this designation.

Within the two study areas, there are a total of five sites designated as Research Natural Areas (RNAs), while much of the mountain has been designated as a scenic Area of Critical Environmental Concern (ACEC) (see Map 3). The RNA designation is intended to protect these areas for research and education.

Three of the RNAs fall within the High Steens WSA, and include the East Kiger Plateau RNA, the South Fork Willow Creek RNA and the Little Wildhorse Lake RNA. Management of the RNAs includes the following:

- minimizing surface disturbing activities detrimental to the plant communities and certain species;
- prohibiting introduction of exotic (non-native) species of plants and animals; and
- authorizing research and educational use by permit only.

The East Kiger Plateau RNA contains 1,240 acres and is on high elevation lands east of Kiger Gorge in the northern portion of the WSA. The RNA designation protects a community of high elevation fescue grassland in excellent condition.

The South Fork Willow Creek RNA provides protection for alpine communities within two habitat types. The 227-acre area is located in a glacial cirque just below the Steens ridgeline.

The Little Wildhorse Lake RNA is located at the upper end of Little Wildhorse Canyon, in the south-central portion of the High Steens WSA. This RNA protects a pristine, high-elevation lake and includes 240 acres of public land.

Two RNAs fall mostly within the boundary of the Little Blitzen Gorge WSA.

Covering most of the upper end of the gorge is the Little Blitzen RNA, containing 2,539 acres and designed to protect a number of plant species of special interest, and six plant communities or habitats in good condition.

At the other end of the canyon, near the western edge of the study area, is the Rooster Comb RNA, covering 720 acres and providing protection for a mountain mahogany community and a black cottonwood riparian area.

Most of both WSAs, and some adjacent lands, are included within the Steens Mountain ACEC. Covering 50,500 acres, the ACEC was designated to protect the scenic, botanical and wildlife values on Steens Mountain. As of January 1, 1987, specific management objectives for the ACEC were not defined.

These special management areas (RNAs and ACEC) would remain as official designations whether or not the WSAs are designated wilderness. Because of their locations in the higher elevations of the mountain, some of the RNAs and part of the scenic ACEC may not require specific actions or restrictions to provide for their protection.

Current plans for the Little Blitzen RNA include the construction of a fence along its western boundary line in order to prohibit livestock use of this sensitive portion of the gorge. It is not expected that any of these special management areas would be withdrawn from mineral entry if they were not designated as wilderness. However, the general management of these areas would include establishing mitigation measures to minimize the impacts of mineral exploration and development.

A section of the Desert Trail crosses part of the High Steens WSA. The BLM and the Desert Trail Association have joined in a cooperative management agreement to share responsibilities for developing and maintaining the Trail. The Trail is part of the Oregon State Recreational Trails System.

The portion of the Donner und Blitzen River complex and its tributaries flowing through these WSAs is part of a 73-mile segment that has been designated a Wild River component of the National Wild and Scenic River System. The Federal designation withdraws from mineral location and leasing all public lands within 0.25 mile on each side of the river (approximately 1,920 acres in the High Steens WSA and 2,560 acres in the Little Blitzen Gorge WSA for a total of 4,480 acres).

The restrictions for the Wild and Scenic River designation would continue to apply within the WSA whether or not the area is designated wilderness.

The WSAs are located within ODFW's Steens Mountain Wildlife Management Unit which contains 1,960 square-miles of land. The High Steens WSA supports a summer population of an estimated 2,500 deer, 150 antelope, 50 elk and 250 bighorns and a winter population of 1,000 deer, 30 antelope and 250 California bighorn sheep. The Little Blitzen Gorge WSA supports a summer population of 500 deer, 15 antelope and 10 elk. None of these animals winter in this WSA. ODFW has not set management objectives for antelope, but has an objective of 11,000 deer for the Steens Mountain Wildlife Management Unit and an objective of 400 bighorn sheep for the east side of Steens Mountain. The proposed increase in bighorns from 250 to 400 is through a natural population increase. The management objectives for this herd area, which provide for protection of bighorn habitat, were developed in conjunction with ODFW as reflected in the Burns District Bighorn Habitat Management Plan and the Andrews Land Use Plan. ODFW uses the High Steens WSA as a site to capture bighorns for relocation to establish new bighorn populations in eastern Oregon. This requires the establishment of temporary net traps and extensive helicopter use.

ODFW's goal for nongame wildlife is to maintain populations of naturally occurring species at self-sustaining levels. Their objective for redband trout and Whitehorse cutthroat trout is to manage for wild populations. Their objective for Wildhorse Lake is to manage for hatchery reared hybrid Lahontan cutthroat trout. Their objective for trout in Wildhorse Creek is to maintain their characteristics and productivity.

The proposed action conforms with ODFW's management objectives for redband trout, Whitehorse cutthroat trout and fishery management of Wildhorse Lake, but would be inconsistent with ODFW's management objectives for bighorn sheep, deer and some nongame wildlife.

ODFW conducts aerial surveys of bighorn sheep, deer and antelope on the east side of Steens Mountain. These surveys are done annually. ODFW conducts annual brood counts of sage grouse, but these counts are done utilizing vehicles. ODFW and Oregon State Police are also responsible for law enforcement with respect to hunting and fishing in these areas. This is an important program because of the amount of recreational use that occurs in these areas. Law enforcement on Steens Mountain relies on the use of both aircraft, and (predominately) ground vehicles.

ODFW uses helicopters to stock Lahontan cutthroat trout in Wildhorse Lake, near the top of the mountain. These fish are stocked on an as-needed basis to maintain the recreational value of the lake. The streams along the east side of the mountain are stocked by helicopter with another fish, Whitehorse cutthroat trout, to expand its range.

Streams along the eastside of Steens Mountain, Big Indian Creek, Little Indian Creek, and the Little Blitzen River are also the subject of fish studies conducted by BLM, in conjunction with ODFW. The purpose of these studies is to monitor aquatic habitat through fish populations. Helicopters are the primary means of access to most of these streams, but ground vehicles are also used.

The U.S. Department of Agriculture conducts a predator control program in the High Steens WSA, in order to reduce predator damage to cattle through aerial shooting of coyotes. The program is conducted on an as-needed basis (usually every other year), primarily in the foothills along the eastern side of the mountain.

The southwestern edge of the High Steens WSA is in the South Steens wild horse Herd Management Area (HMA). Management of the HMA will not be significantly affected by any of the alternatives.

Harney County has not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study and EIS planning, scoping and public review process. These issues concern both the effects of wilderness designation on existing and potential land uses or resources in the WSA, as well as the effects of existing and potential land uses or resources on wilderness values. Land uses or resources raised as issues specifically for this WSA include:

- impact on other special designations in both WSAs, such as RNAs, ACECs and the Steens Mountain Recreation Lands (Wilderness designation would not change these other designations, but would likely create a need for revision of the associated management plans),
- impact on the areas' overall wilderness values, impact on potential mineral exploration and development in the WSAs,
- impact on the numerous plant species of special interest found in the WSAs,
- impact on wildlife values, existing fish stocking programs, population surveys currently conducted in these areas and overall wildlife habitat, and

- impact on livestock grazing use levels and management for both WSAs.

No other issues specific to this WSA were raised by BLM or the public.

2. Description of the Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made.

The following alternatives are analyzed:

- all wilderness
- enhanced wilderness
- partial alternative
- proposed action
- no wilderness/no action

The enhanced wilderness alternative does not analyze the possible combination of the High Steens and Little Blitzen Gorge WSAs with any of the adjacent study areas. Combining the High Steens WSA with the Alvord Desert WSA on the southeast by closing the road between them would not be feasible. The boundary road shared by these two study areas is a major county road. It provides access to the southern end of Harney County along the eastern side of Steens Mountain and is well-maintained and well-traveled.

Combining the High Steens WSA with the South Fork of the Donner und Blitzen River WSA to the southwest is also not feasible. Although the road which separates the two study areas is not a well-maintained road, it does provide access to private and other lands on the western side of the mountain. This road forms a common boundary for the two WSAs for less than 1 mile, and closing it would not result in a substantial improvement in the manageability or wilderness values of either study area.

The same is true of combining the Little Blitzen Gorge WSA and the Blitzen River WSA on the west; closing a short section of road between the areas would not make a substantial difference in the manageability or wilderness values of these areas.

All Wilderness

The all wilderness alternative would recommend all 69,740 acres of the High Steens WSA and all 9,400 acres of the Little Blitzen Gorge WSA, for a total of 79,140 acres, suitable as wilderness (see Map 2). They would be managed as two separate wilderness areas. For purposes of analysis under this alternative, it is assumed that the dead-end roads which enter the High Steens WSA would remain open and none of the private land, State land or mineral estate of split-estate land within the area would be acquired.

Energy and Mineral Development Actions

Wilderness designation would close a total of 71,240 acres of public land within the two WSAs to all forms of appropriation under the mining and mineral leasing laws. In this alternative, approximately 4,480 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships. A total of 3,420 acres of split-estate and private lands would remain open to mineral exploration and development.

In the majority of both WSAs, abundant direct and indirect evidence indicates a high potential for the occurrence of copper, gold, mercury, molybdenum and silver. The area contains nine claims, all within the High Steens WSA. Since there is a lack of activity on claims and numerous other claims have been dropped, no exploration or development of the existing claims is projected under this alternative.

The Little Blitzen Gorge WSA does not contain any acreage with a high potential rating for the occurrence of geothermal resources. Based on abundant direct and indirect evidence, geothermal resources have a high potential for occurrence within 6,106 acres in the southeastern and eastern areas of the High Steens

WSA. The majority of this area lies within the Alvord Known Geothermal Resource Area (KGRA). Development would not occur under this alternative.

No mineral or energy development is projected on the private, State or split-estate lands within the recommended wilderness boundary, due to the small size and isolated nature of these parcels.

There is a known deposit of an industrial mineral, perlite, with an inferred reserve of 400,000 tons on the east escarpment of Steens Mountain near Little Alvord Creek. Due to the lack of activity involving the perlite deposit and the availability of alternative sources, no exploration or development is projected.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and to be consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

Wilderness designation would allow continued ODFW trapping of bighorn sheep in the High Steens WSA. Helicopter landings within the WSA would be allowed for this purpose.

ODFW and BLM fishery studies using helicopter and vehicles in both WSAs would be precluded. Fish stocking by ODFW using a helicopter would continue. Sage grouse brood counts by ODFW are from a perimeter road which would remain open.

Livestock Management Actions

Based on preliminary studies, a reduction in livestock grazing use of 206 AUMs is projected, depending on the results of monitoring. This reduction would result in a total livestock grazing use of 4,702 AUMs in the High Steens WSA. In the absence of new range improvement projects designed to increase available forage, the reduction would be necessary to offset a shortage of available forage in the Andrews allotment portion of this WSA. Livestock grazing use in the other five allotments in this WSA of 4,369 AUMs would remain unchanged.

Livestock grazing use would remain at the current estimated level of approximately 1,248 AUMs in portions of two grazing allotments located in the Little Blitzen Gorge WSA.

The seasons of use and distribution of AUMs for all allotment portions in each WSA are shown in Table 5.

Vehicle use for livestock management on 30.5 miles of ways would be precluded. Management of livestock and maintenance of 9 miles of fence would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years to maintain two springs and three reservoirs.

Recreation Management Actions

The entire 79,140 acres of the High Steens WSA and the Little Blitzen Gorge WSA would be closed to motorized vehicle use. This action would close 30.5 miles of vehicle ways. Presently, vehicle use is limited to the existing roads and ways. An off-highway vehicle designation within the Steens Mountain Recreation Area prohibits vehicle use on approximately 7.5 miles of ways. Cross-country travel is also prohibited.

Current recreational use is estimated to be 26,000 visitor days per year. Most of the current use utilizes vehicles for access into the area via existing roads and ways.

Enhanced Wilderness

Under the enhanced wilderness alternative, a portion of the High Steens WSA and all of the Little Blitzen Gorge WSA would be combined and 64,370 acres of public land would be recommended as suitable for wilderness designation; 54,800 acres in the High Steens WSA, 9,570 acres in the Little Blitzen Gorge WSA, including an additional 170 acres of public land outside of the Little Blitzen Gorge WSA on the north side (see Map 4).

In relation to the High Steens WSA, an attempt would be made to acquire inholdings and boundary parcels totaling 5,830 acres of private land and a 430-acre parcel of State land.

An attempt would also be made to acquire the mineral estate of the 1,200 acres of split-estate land within the recommended boundary and included above in the suitable acreage. With the exception of some parcels which are located in the bottom of Kiger Gorge, most of these parcels occur around the perimeter of the study area. The land and mineral estate acquisition would improve the manageability of the study area (particularly around the boundary) and contribute to the area's wilderness values. Assuming acquisition of the private lands and State land, and the addition of 170 acres of public land, the total area recommended suitable would be 70,630 acres.

A 7-mile section of the Steens Mountain Loop Road, a standard gravel road, would be closed to combine the two WSAs into a single wilderness area. Also, all or part of three dead-end low standard dirt roads, totaling 2 miles in length, would be closed.

As part of the enhanced wilderness alternative, 14,940 acres of public land would be recommended as nonsuitable for wilderness, all of it in the High Steens WSA. Most of these lands are located on the southeastern and southwestern portions of the WSA, although there are small parcels scattered along the western and northern boundary.

Under this alternative, the boundary of the wilderness area would be substantially different from the current WSAs' boundary lines. The Steens Mountain Loop Road would be closed along the southern boundary of the Little Blitzen Gorge study area from the intersection of the Loop Road with the road to Wildhorse Lake, near the mountain's summit, west to the overlook above Big Indian Gorge. This would allow for a 1 mile dead-end road to the Big Indian overlook on the west, and a 7-mile dead-end road to the summit of the mountain near the center of the wilderness. The dead-end road to the top of the mountain would provide for continued vehicle access to the major scenic overlooks at Kiger Gorge, the East Rim, Wildhorse Lake and to radio facilities at the summit.

The boundary line along the north side of the Little Blitzen Gorge WSA, with acquisition of adjacent private land, would follow a low standard dirt road which parallels the north side of the canyon. Boundary line adjustments in the northwestern and northern portions of the High Steens WSA would be along legal subdivisions.

The eastern boundary line, in the northern portion of the High Steens WSA, would also be adjusted with the acquisition of private lands. The southern part of the eastern boundary line would follow a contour line. Following a small drainage just north of Little Alvord Creek, the boundary line would follow the drainage until it reached the 5,200-foot level and then would follow this contour line until it intersected with Little Alvord Creek. South of Little Alvord Creek, the boundary line would be drawn along the 5,600-foot contour level to Pike Creek, the 6,000-foot contour level to Indian Creek and the 6,800-foot contour level to the ridge overlooking Wildhorse Creek. From this point, it would follow the ridge down until it intersected with a portion of the existing WSA boundary line along a legal subdivision. In general, the boundary would conform not only with contour levels, but some form of physical feature, in most cases, the edges of small "benches" along this part of Steens Mountain.

On the southwest, in the High Steens WSA, the boundary line would be along the western rim of Wildhorse Creek Canyon. Because this area of the WSA is isolated from other parts of the WSA and because of the long-standing history of vehicle use by hunters in the area, it would be difficult to enforce a vehicle closure if the area were included in a wilderness area.

Only relatively minor adjustments would be made to the remainder of the western boundary line. Some private land and mineral estate of split-estate lands would be acquired, some public land not in the WSA would be included in the wilderness and a small amount of public land in the WSA would not be included in the wilderness area.

Under this alternative, the small boundary adjustments (both adding and deleting acreage) around the perimeter of the WSAs would help to improve the identification of the boundary line and the ability to locate (survey) the boundary line more easily.

The recommended acquisition of private land and the mineral estate of split-estate land within the area would improve the areas' wilderness values and recreation opportunities by eliminating possible restrictions on the movement of visitors within the area and by eliminating the potential for development on these lands.

Energy and Mineral Development Actions

Enhanced wilderness designation would close 64,102 acres within the area of consideration to all forms of appropriation under mining and mineral leasing laws, assuming successful acquisition of private lands, State lands and split-estate lands. In this alternative, approximately 6,528 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships.

Within the suitable area under this alternative there are 1,516 acres with high potential for the occurrence of geothermal resources, all within the High Steens WSA. The High Steens WSA contains abundant direct and indirect evidence for this geothermal resource which lies within the southern and eastern areas of the WSA. Within the suitable area boundary, the high geothermal potential lands lie along the eastern border. All of these lands are within the Alvord KGRA. Development of these lands would not occur in this alternative.

Interest in the geothermal potential of the area and related activities has noticeably subsided in recent years. Potential future interest in the geothermal resources of the region would likely result in installation of 45 temperature gradient wells within the nonsuitable area in the southeast part of the High Steens WSA. This exploration would temporarily disturb 13 acres of land, 11 acres for drill pads and 2 acres for access.

Assuming the above exploration proves the existence of a satisfactory geothermal resource, the following scenario could take place:

Within the High Steens WSA there would be one 10-megawatt geothermal power plant. This power plant and associated collection fields would be located in the present KGRA, near Alvord Hot Springs. The plant and collection fields would utilize 60 acres. The transmission line and roads to and from the plant would require 3 miles of construction, disturbing 16 acres of land within the present WSA. Total estimated surface disturbance within the boundary of the present wilderness study area would be 76 acres.

In the majority of the area considered suitable under the enhanced alternative, abundant direct and indirect evidence indicates a high potential for the occurrence of copper, gold, mercury, molybdenum and silver. Since there is a lack of activity on the claims and numerous claims have been dropped, no exploration or development of the existing claims is projected under this alternative.

The nonsuitable lands outside of the designated wilderness would be open to mineral entry. It is postulated that exploration for silver, gold, mercury, copper and molybdenum would occur at 10 locations. This exploration would disturb 2.5 acres of land for core drilling and trenching. This exploration would be scattered over the entire area. It is expected that 2 miles of temporary cross-country travel would be involved, disturbing an additional 2 acres of land, for a total disturbed area of 4.5 acres. Given the known past and currently active copper and molybdenum deposits in the world, this exploration is not expected to locate deposits of copper or molybdenum that would be economically competitive and subject to development.

Exploration is anticipated to prove the existence of an economical ore body for silver, gold and mercury. The following mineral scenario could take place within the foreseeable future within the eastern boundary area of the High Steens WSA north of Alvord Hot Springs:

Gold, silver and mercury would be mined over a period of 20 years within one 150-acre open-pit mine. All 150 acres would not be disturbed at one time as lands would be reclaimed as the work progressed. Approximately 50 acres would continuously be disturbed. A processing mill would disturb an additional 50 acres. Three miles of new haul roads and associated powerlines within the present WSA would disturb 12 acres. Improvements to existing roads would disturb an additional 3 acres. Total acres disturbed under this scenario, before reclamation, would equal 215 acres.

There is a known deposit of an industrial mineral (perlite) with an inferred reserve of 400,000 tons on the east escarpment of Steens Mountain near Little Alvord Creek. Due to the lack of activity involving the perlite deposit and the availability of alternative sources, no exploration or development is projected.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and, in the suitable area, consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

Wilderness designation would allow continued ODFW trapping of bighorn sheep in the areas recommended suitable. Helicopter landings within this area would not be precluded. Only a small part of the bighorn range is in the area recommended as nonsuitable.

ODFW and BLM fishery studies using a helicopter and ground vehicles in both WSAs would be precluded. Fish stocking by ODFW using a helicopter would continue. Sage grouse brood counts by ODFW are from a perimeter road which would remain open.

Livestock Management Actions

Based on preliminary studies, a reduction in livestock grazing use of 206 AUMs is projected depending upon the results of monitoring. This reduction would result in a total livestock grazing use of 4,702 AUMs in the High Steens WSA.

In the absence of new range improvement projects designed to increase forage, the reduction would be necessary to offset a shortage of available forage in the Andrews allotment portion of this WSA. Livestock grazing use on the other five allotments in this WSA of 4,369 AUMs would remain unchanged.

Livestock grazing use would remain at the current estimated level of approximately 1,248 AUMs in portions of two grazing allotments located in the Little Blitzen River WSA. Total grazing use for both WSAs would be 5,950 AUMs.

The seasons of use and distributions of AUMs for all allotment portions in each WSA are shown in Table 5. One spring would be developed in the area designated nonsuitable for wilderness. The purpose of developing the spring would be to protect the source and overflow from livestock damage.

Vehicle use for livestock management on 20.5 miles of ways and 9 miles of roads would be precluded. Management of livestock and maintenance of 3 miles of fence would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years to maintain one spring and three reservoirs. Vehicle use for livestock management would continue on 10 miles of ways and 13 miles of roads in the nonsuitable area, amounting to approximately 10 trips per year.

Recreation Management Actions

Assuming acquisition of private inholdings and State parcels, the entire 70,630 acres would be closed to vehicle use, involving 9 miles of roads and 20.5 miles of ways. Presently, vehicle use is limited to existing roads and ways. An off-highway vehicle designation with the Steens Mountain Recreation Area prohibits vehicle use on approximately 7.5 miles of ways. Cross-country travel is also prohibited.

Current recreational use is estimated to be 26,000 visitor days per year. Most of the current use utilizes vehicles for access into the area via existing (open) roads and ways.

In the nonsuitable area, vehicle-oriented recreation would continue on 10 miles of ways and 13 miles of roads.

Partial Alternative

The partial alternative would recommend a total of 42,360 acres of public land suitable for wilderness designation; 35,930 acres of the High Steens WSA and 6,430 acres of the Little Blitzen Gorge WSA (see Map 5). An attempt would be made to acquire 2,100 acres of private land and State land through purchase or exchange with willing landowners, including 1,590 acres of private land and 410 acres of State land in the High Steens WSA, and a 100-acre parcel of private land adjacent to the Little Blitzen Gorge WSA. An attempt would also be made to acquire the mineral estate of 1,150 acres of split-estate lands. Assuming acquisition of these parcels, the total area recommended suitable under this alternative would be 44,460 acres. The two WSAs would be managed as separate wilderness areas.

The partial alternative would recommend 36,780 acres of public land nonsuitable for wilderness; 33,810 acres in the High Steens WSA and 2,970 acres in the Little Blitzen Gorge WSA. A number of boundary line adjustments would improve the overall manageability of the area and reduce conflicts with competing resource values.

On the northwestern corner of the Little Blitzen Gorge WSA, the boundary line would follow the northern and eastern rim of the canyon, avoiding most of the private lands which occur along the boundary line while still providing an identifiable boundary line and including features of the gorge.

After encircling the upper end of the Little Blitzen Gorge, the boundary line would proceed to follow the Steens Loop Road, a standard gravel road, along an easily identifiable boundary line. At the western end of Little Blitzen Gorge, the boundary line would leave the rim and follow legal subdivisions west and north, meeting up with the northern canyon rim.

The upper elevation flat land, near the top of the mountain, which is excluded by this boundary configuration, would not be recommended for wilderness so that recreationists could continue to drive vehicles on the designated spur roads extending off the main Steens Mountain Loop Road. The area currently receives a large amount of such use, which is in accordance with BLM's Steens Mountain Recreation Area Management Plan. In addition, leaving this part of the mountain out of the wilderness area would allow BLM to accommodate projected future increases in vehicle-oriented visitor use.

The boundary line of the proposed High Steens wilderness area, starting at the northeastern boundary point located along the Steens Mountain Loop Road, would follow the northern rim of Big Indian Gorge. Remaining south of the Loop Road, the boundary line skirts the upper end of Big Indian Gorge and Wildhorse Canyon, excluding the radio facility and the road leading to it, and turns north following the edge of the Steens Rim. The boundary line follows the rim until it reaches Kiger Gorge where it would then follow the western rim of the gorge.

The flatter land west of Kiger Gorge would be recommended as nonsuitable for wilderness. This area has a limited number and range of wilderness values. It has a large amount of adjacent unmarked private land and a private inholding. Also, livestock operators make extensive use of the vehicle way for livestock management in this area.

From the western rim of Kiger Gorge, the boundary line turns east, along a legal subdivision, to join with the eastern rim. Following the eastern rim for a short distance to the south, the boundary would again turn east, following Mann Creek downstream to the eastern side of the WSA.

The land not recommended as suitable on this northern end of the area includes the northern extension of the east rim of Kiger Gorge and a block of land north of Mann Creek. Both of these parcels extend away from the block of land of the WSA, are surrounded on three sides by unmarked private land and can only be partially identified by physical features.

On the eastern side of the High Steens, the boundary line would turn south of Mann Creek at the 5,800-foot elevation level near the base of the east rim, following this contour until it reached Cottonwood Creek, then following the 5,200-foot elevation level south to Little Alvord Creek. This boundary would be more easily identifiable than the WSA boundary line and would avoid an irregular configuration along private land.

The southeastern, southern and southwestern boundary lines are the same as those under the enhanced alternative. Following several contour lines and physical features, the southeastern boundary line would exclude an area with existing mineral developments and the potential for additional development which could result in manageability problems.

The remainder of the western boundary line follows a combination of physical features, including the western ridge of Wildhorse and Little Wildhorse Canyons and legal subdivisions. It returns to the northeastern boundary point just south of the Steens Mountain Loop Road.

The partial alternative would protect wilderness values of the areas, but would allow unrestricted access to the top of the mountain. Vehicle access along the upper section of the South Loop Road would not be closed as a result of wilderness designation under this alternative.

Energy and Mineral Development Actions

The partial alternative would close 39,276 acres within both WSAs to all forms of mineral entry, assuming the acquisition of private, and State lands and mineral estate of split-estate lands. In this alternative, approximately 5,184 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships.

In the suitable area, there is a known deposit of an industrial mineral (perlite) with an inferred reserve of 400,000 tons on the east escarpment of Steens Mountain near Little Alvord Creek. Due to the lack of activity involving the perlite deposit and the availability of alternative sources, no exploration or development is projected.

All of the 6,106 acres (all within the High Steens WSA) with a high potential for the occurrence of geothermal resources are located in the area recommended nonsuitable under this alternative. The High Steens WSA contains abundant direct and indirect evidence for this geothermal resource within the southeastern and eastern portions of the WSA. The majority of this high potential area also lies within the Alvord KGRA.

Interest in the geothermal potential of the area and related activities has noticeably subsided in recent years. Potential future interest in the geothermal resources of the region would likely result in 45 temperature gradient wells within the southeast portion of the High Steens WSA. This exploration would temporarily disturb 13 acres of land, 11 acres for drill pads and 2 acres for access.

Assuming the above exploration proves the existence of a satisfactory geothermal resource, the following scenario could take place:

Within the area recommended nonsuitable in the High Steens WSA there would be one 10-megawatt geothermal power plant. This power plant and associated collection fields would be located in the present KGRA, near Alvord Hot Springs. The plant and collection fields would utilize 60 acres. The transmission line and roads to and from the plant would require 3 miles of construction, disturbing 16 acres of land within the present WSA. Total surface disturbance would be approximately 76 acres.

In the majority of the area considered suitable, abundant direct and indirect evidence indicates a high potential for the occurrence of copper, gold, mercury, molybdenum and silver. The suitable area contains seven claims, all within the High Steens WSA. Since there is a lack of activity on the claims and numerous other claims have been dropped, no exploration or development of the existing claims is projected under this alternative.

The nonsuitable lands outside of the designated wilderness would be open to mineral entry.

It is postulated that exploration for silver, gold, mercury, copper and molybdenum would occur at 10 locations. It would disturb 2.5 acres of land for core drilling and trenching. This exploration would be scattered over the entire area. It is expected that 2 miles of temporary cross-country travel would be involved, disturbing an additional 2 acres of land for a total disturbed area of 4.5 acres. Given the known past and currently active copper and molybdenum deposits in the world, this exploration is not expected to locate deposits of copper or molybdenum that would be economically competitive and subject to development.

Exploration is anticipated to prove the existence of an economical ore body for silver, gold and mercury. The following mineral scenario could likely take place within the foreseeable future within the eastern boundary area of the High Steens WSA north of Alvord Hot Springs:

Gold, silver and mercury would be mined over a period of 20 years within one 150-acre open-pit mine. All 150 acres would not be disturbed at one time as lands would be reclaimed as the work progressed. Approximately 50 acres would continuously be disturbed. A processing mill would disturb an additional 50 acres. Three miles of new haul roads and associated powerlines within the present WSA would disturb 12 acres. Improvements to existing roads would disturb an additional three acres. Total acres disturbed under this scenario, before reclamation, would equal 215 acres.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and in the suitable area, consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

Within the area recommended as suitable in the High Steens WSA, wilderness designation would allow continued ODFW trapping of bighorn sheep for relocation to other proposed release sites in eastern Oregon. Helicopter landings would not be precluded. Only a small part of the bighorn range is in the area recommended as nonsuitable.

ODFW and BLM fishery studies using a helicopter and ground vehicles in both WSAs would also be precluded. Fish stocking by ODFW using a helicopter would continue. Sage grouse brood counts by ODFW are from a perimeter road which would be in the area recommended as nonsuitable and would be left open.

A proposed fish habitat improvement project in Cottonwood Creek would be partly in the area recommended suitable for wilderness. That portion within the suitable area would not be allowed. The portion of the project in the area recommended nonsuitable for wilderness would be allowed.

Livestock Management Actions

Based on preliminary studies, a reduction in livestock grazing use of 206 AUMs is projected, depending on the results of monitoring. This reduction would result in a total livestock grazing use of 4,702 AUMs in the High Steens WSA. In the absence of new range improvement projects designed to increase forage, the reduction would be necessary to offset a shortage of available forage in the Andrews allotment portion of this WSA. Livestock grazing use in the other five allotments in this WSA of 4,369 AUMs would remain unchanged.

Livestock grazing use would remain at the current estimated level of approximately 1,248 AUMs in portions of two grazing allotments located in the Little Blitzen Gorge WSA.

The seasons of use and distribution of AUMs for all allotment portions in each WSA are shown in Table 5.

Vehicle use for livestock management on 8.5 miles of ways and 1 mile of dead-end road would be precluded. Management of livestock and maintenance of 1 mile of fence would be conducted on horseback. Mechanized heavy equipment would be used on the average of once every 10 years to maintain one spring and one reservoir.

In the nonsuitable area, one spring would be developed. The purpose of developing the spring would be to protect the source and overflow from livestock damage.

Vehicle use for livestock management would continue on 22 miles of ways and 14 miles of roads in the area recommended nonsuitable, amounting to approximately 10 trips per year.

Recreation Management Actions

Assuming acquisition of the private inholding, the entire 44,460 acres would be closed to vehicle use, involving 8.5 miles of ways and 1 mile of dead-end road. Presently, vehicle use is limited to existing roads and ways. An off-highway vehicle designation with the Steens Mountain Recreation Area prohibits vehicle use on approximately 7.5 miles of ways and prohibits cross-country travel.

In the nonsuitable portion, vehicle-oriented recreation would continue on 22 miles of ways and 14 miles of roads.

Current recreation use is estimated to be 26,000 visitor days per year. Most of the current use utilizes vehicles for access into the area via existing (open) roads and ways.

Proposed Action

The proposed action would recommend 31,975 acres of public land suitable for wilderness designation in the High Steens WSA. The remaining 37,765 acres of this WSA would be recommended as nonsuitable. An attempt would be made to acquire 958 acres of private land, 410 acres of State land and 60 acres of mineral estate of split-estate lands.

Under this alternative, 4,600 acres of the Little Blitzen Gorge WSA would be recommended suitable for wilderness designation. The remaining 4,800 acres would be recommended as nonsuitable. An attempt would be made to acquire a 100-acre parcel of private land adjacent to this WSA. (see Map 6.)

Assuming acquisition of all proposed lands, the total area recommended suitable for wilderness designation would be 38,043 acres, with 33,343 acres in the High Steens wilderness area and 4,700 acres in the Little Blitzen Gorge wilderness area. The two areas would be managed as separate units.

Under this alternative, a total of 1.75 miles of ways would be closed.

The proposed action would recommend a total of 42,565 acres of public land nonsuitable as wilderness; 37,765 acres in the High Steens WSA and 4,800 acres in the Little Blitzen Gorge WSA. A number of boundary line adjustments would improve the overall manageability of the wilderness areas and reduce conflicts with competing resource values.

On the northwestern corner of the Little Blitzen Gorge WSA, the boundary line would follow the northern and eastern rim of the canyon, avoiding most of the private lands which occur along the boundary road, while still providing an identifiable boundary line and including features of the gorge.

After encircling the upper end of the Little Blitzen Gorge, the boundary line would follow the southern rim of the gorge, along an easily identifiable boundary line. At the western end of Little Blitzen Gorge, the boundary line would leave the rim and follow legal subdivisions west and north, meeting up with the northern canyon rim.

The upper elevation flat land, near the top of the mountain, which is excluded by this boundary configuration, would not be recommended for wilderness in order that recreationist could continue to drive vehicles on the designated spur roads extending off the main Steens Mountain Loop Road, a standard gravel road. The area currently receives a large amount of such use and is in accordance with BLM's Steens Mountain Recreation Area Management Plan. In addition, leaving this part of the mountain out of the wilderness area would allow BLM to accommodate projected future increases in vehicle-oriented visitor use.

The boundary line of the High Steens wilderness area, starting at the northeastern boundary point located along the Steens Mountain Loop Road, would follow the northern rim of the Big Indian Gorge. Remaining south of the Loop Road, the boundary line would skirt the upper end of Big Indian Gorge and Wildhorse Canyon, excluding the radio facility and the road leading to it, then turns north following the edge of the Steens Rim. The boundary line follows the rim until it reaches Kiger Gorge where it would then follow the western rim of the gorge.

The flatter land west of Kiger Gorge would also be recommended as nonsuitable for wilderness. This area has a limited number and range of wilderness values. It has a large amount of adjacent unmarked private land and private inholdings. Also, the livestock operators need to use the vehicle ways for livestock management.

From the western rim of Kiger Gorge, the boundary line turns east, along a legal subdivision, to join with the eastern rim. Following the eastern rim for a short distance to the south, the boundary would again turn east, following Mann Creek downstream to the eastern side of the WSA.

The land not recommended as suitable on this northern end of the area includes the northern extension of the east rim of Kiger Gorge and a block of land north of Mann Creek. Both of these parcels extend away from the main block of land of the WSA, are surrounded on three sides by unmarked private land and can be only partially identified by physical features.

On the eastern side of the High Steens WSA, the boundary line would turn south of Mann Creek at the 5,800-foot elevation level near the base of the east rim, following this contour until it reached Cottonwood Creek, then following the 5,200-foot elevation level south to Little Alvord Creek. This boundary would be more easily identifiable than the WSA boundary line and would avoid an irregular configuration along private land.

The southeastern, southern and southwestern boundary lines are the same as those under the enhanced alternative. Following several contour lines and physical features, the southeastern boundary line would exclude an area with existing mineral developments and the potential for additional development which could result in manageability problems.

The remainder of the western boundary line follows a combination of physical features, including the western ridge of Wildhorse and Little Wildhorse Canyons and legal subdivisions. It returns to the northeastern boundary point just south of the Steens Mountain Loop Road.

Energy and Mineral Development Actions

Wilderness designation would close a total of 32,035 acres of public land within the boundary of the proposed action to all forms of appropriation under the mining and mineral leasing laws. In this alternative, approximately 4,480 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships.

If acquisition is successful, 958 acres of private land, 410 acres of State land and 60 acres of mineral estate of split-estate land would be closed to mineral entry. A total of 31,975 acres would be closed to mineral entry in the High Steens WSA. A 100-acre parcel of private land is proposed for acquisition, and if successful, would result in a closure of a total of 4,700 acres in the Little Blitzen Gorge wilderness area. Under this alternative, 37,765 acres of the High Steens WSA and 4,800 acres of the Little Blitzen Gorge WSA would remain open to mineral exploration and development.

All of the 6,106 acres (all within the High Steens WSA) with high potential for the occurrence of geothermal resources are located outside of the suitable area. The High Steens WSA contains abundant direct and indirect evidence for this geothermal resource within the southeastern and eastern portions of the WSA. The majority of this high potential area also lies within the Alvord KGRA. The High Steens WSA contains three geothermal leases.

Projected geothermal exploration includes 45 temperature gradient wells within the southeastern portion of the High Steens WSA. This exploration would temporarily disturb 13 acres of land, 11 acres for drill pads and 2 acres for access.

Assuming the above exploration proves the existence of a satisfactory geothermal resource, the following scenario could take place:

Within the nonsuitable portion of the High Steens WSA there would be one 10-megawatt geothermal power plant. This power plant and collection fields would be located in the present KGRA, near Alvord Hot Springs. The plant and collection fields would utilize 60 acres. The transmission line and roads to and from the plant would require 3 miles of construction, disturbing 16 acres of land within the present WSA. total actual surface disturbance within the boundary of the wilderness study area would be 76 acres.

In most of the area recommended suitable, abundant direct and indirect evidence indicates a high potential for the occurrence of copper, gold, mercury, molybdenum and silver. The suitable area contains seven claims, all within the High Steens WSA. Since there is a lack of activity on the claims and numerous other claims have been dropped, no exploration or development of the existing claims is projected under this alternative.

In the suitable area, there is a known deposit of an industrial mineral, perlite, with an inferred reserve of 400,000 tons on the east escarpment of Steens Mountain near the Little Alvord Creek. Due to the lack of activity involving the perlite deposit and the availability of alternative sources, no exploration or development is projected.

The nonsuitable lands outside of the designated wilderness would be open to mineral entry. It is postulated that exploration would occur at 10 locations. Exploration would disturb 2.5 acres of land for core drilling and trenching and would be scattered over the entire area. It is expected that this exploration would involve 2 miles of cross-country travel, disturbing an additional 2 acres of land, for a total of 4.5 acres temporarily disturbed by exploration activity. Given the known past and currently active copper and molybdenum deposits in the world, this exploration is not expected to locate deposits of copper or molybdenum that would be economically competitive and subject to development.

Exploration is anticipated to prove the existence of an economical ore body for silver, gold and mercury. The following mineral scenario could take place within the foreseeable future in the eastern boundary area of the High Steens WSA north of Alvord Hot Springs:

Gold, silver and mercury would be mined over a period of 20 years within one 150-acre open pit mine. All 150 acres would not be disturbed at one time as lands would be reclaimed as the work progressed. Approximately 50 acres would continuously be disturbed. A processing mill would disturb an additional 50 acres. Three miles of new haul roads and associated powerlines within the present WSA would disturb 12 acres. Improvements to existing roads would disturb an additional 3 acres. Total acres disturbed under this scenario, before reclamation, would equal 215 acres.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and in the suitable portion, consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

Within the portion of the High Steens WSA recommended suitable for wilderness, designation would allow continued ODFW trapping of bighorn sheep for relocation to other proposed release sites in eastern Oregon. Helicopter landings would not be precluded. Only a small part of the bighorn range is in the area recommended as nonsuitable.

ODFW and BLM fishery studies using a helicopter and vehicles in both WSAs would also be precluded. Fish stocking by ODFW using a helicopter would continue. Sage grouse brood counts by ODFW are from a perimeter road which would be in the area recommended as nonsuitable and it would be left open.

A proposed fish habitat improvement project in Cottonwood Creek would be partly in the area recommended suitable for wilderness. That portion within the suitable area would not be allowed. The portion of the project in the area recommended nonsuitable for wilderness would be allowed.

Livestock Management Actions

Based on preliminary studies, a reduction in livestock grazing use of 206 AUMs is projected depending on the results of monitoring. This reduction would result in a total livestock grazing use of 4,702 AUMs in the High Steens WSA. In the absence of new range improvement projects designed to increase available forage, the reduction would be necessary to offset a shortage of available forage in the Andrews allotment portion of this WSA. Livestock grazing use in the other five allotments in this WSA of 4,369 AUMs would remain unchanged.

Livestock grazing use would remain at the current estimated level of approximately 1,248 AUMs in portions of two grazing allotments located in the Little Blitzen Gorge WSA. The seasons of use and distribution of AUMs for all allotment portions in each WSA are shown in Table 5.

Vehicle use for livestock management on 1.75 miles of ways would be precluded. Management of livestock and maintenance of 3 miles of fence would be conducted on horseback.

In the nonsuitable area, one spring would be developed. The purpose of developing the spring would be to protect the source and overflow from livestock damage.

Vehicle use for livestock management would continue on 28.75 miles of ways and 15 miles of roads in the nonsuitable area, amounting to approximately 10 trips per year.

Recreation Management Actions

Assuming acquisition of the private inholding, the entire 36,677 acres would be closed to vehicle use, involving 1.75 miles of ways. Presently, vehicle use is limited to existing roads and ways. An off-highway vehicle designation with the Steens Mountain Recreation Area prohibits use on 7.5 miles of roads and ways. Cross-country travel is also prohibited.

In the nonsuitable area, motorized vehicle use would continue on 28.75 miles of ways and 15 miles of roads.

Current recreation use is estimated to be 26,000 visitor days per year. Most of the current use utilizes vehicles for access into the area via existing (open) roads and ways.

No Wilderness/No Action

The no wilderness/no action alternative would recommend the entire WSA nonsuitable as wilderness. It represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

The entire 79,140 acres of both WSAs would be open to mineral entry, with the exception of approximately 4,480 acres already withdrawn from mineral location and leasing through Congressional designation of the Donner und Blitzen River within the Wild and Scenic River System.

Geothermal resources have a high potential for occurrence within 6,106 acres of the High Steens WSA. The Little Blitzen Gorge WSA contains no high potential areas. Within the High Steens WSA, there is abundant direct and indirect evidence for this geothermal resource which lies within the southeastern and eastern parts of the WSA. The majority of this area also lies within the Alvord KGRA. The High Steens WSA contains three geothermal leases.

Interest in the geothermal potential of the area and related activities has noticeably subsided in recent years. Renewed interest in the geothermal resources of the region could result in 45 temperature gradient wells within the southeast portion of the High Steens WSA. This exploration would temporarily disturb 13 acres of land, 11 acres for drill pads and 2 acres for access.

Assuming the above exploration proves the existence of a satisfactory geothermal resource, the following scenario could take place:

Within the High Steens WSA there would be one 10-megawatt geothermal power plant. This power plant and associated collection fields would be located in the present KGRA, near Alvord Hot Springs. The plant and collection fields would utilize 60 acres. The transmission line and roads to and from the plant would require 3 miles of construction, disturbing 16 acres of land within the present WSA. Total actual surface disturbance would be approximately 76 acres.

In the majority of both WSAs, abundant direct and indirect evidence indicates a high potential for the occurrence of copper, gold, mercury, molybdenum and silver.

It is expected that exploration would occur at 50 locations. This exploration would disturb 12 acres of land for core drilling and trenching. This exploration would be scattered over the entire area. It is expected that this exploration will involve 8 miles of cross-country travel, disturbing an additional 8 acres of land, for a total of 20 acres temporarily disturbed by exploration activity. Given the known past and currently active copper and molybdenum deposits in the world, this exploration is not expected to locate deposits of copper or molybdenum that would be economically competitive and subject to development.

Exploration is anticipated to prove the existence of an economical ore body for silver, gold and mercury. The following mineral scenario could take place within the foreseeable future in the eastern boundary area of the High Steens WSA north of Alvord Hot Springs:

Gold, silver and mercury would be mined over a period of 20 years within one 150-acre open pit mine. All 150 acres would not be disturbed at one time as lands would be reclaimed as the work progressed. Approximately 50 acres would continuously be disturbed. A processing mill would disturb an additional 50 acres. Three miles of new haul roads and associated powerlines within the present WSA would disturb 12 acres. Improvements to existing roads would disturb an additional three acres. Total acres disturbed under this scenario, before reclamation, would equal 215 acres.

There is a known deposit of an industrial mineral (perlite) with an inferred reserve of 400,000 tons on the east escarpment of the Steens Mountain near the Little Alvord Creek. Due to the lack of activity involving the perlite deposit and the availability of alternative sources, no exploration or development is projected.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. Under this alternative, 24 pools would be blasted in the stream bottom of Cottonwood Creek to improve habitat for Whitehorse cutthroat trout.

ODFW's use of the east side of Steens Mountain for trapping bighorn sheep for relocation to other eastern Oregon sites would continue and the restoration of bighorn populations would be faster than without use of the east Steens area. ODFW and BLM fisheries studies and sage grouse brood counts would also continue.

Livestock Management Actions

Livestock grazing use in the High Steens WSA would remain at the current estimated level of 4,908 AUMs.

Livestock grazing use would remain at the current estimated level of approximately 1,248 AUMs in portions of two grazing allotments located in the Little Blitzen Gorge WSA. The seasons of use and distribution of AUMs for all allotment portions in each WSA are shown in Table 5.

One spring development is proposed for construction under this alternative. The purpose of developing the spring would be to protect the source and overflow from livestock damage.

Vehicle use for livestock management and facility inspection and maintenance for the 9 miles of fence would continue on the existing 30.5 miles of ways and 15 miles of dead-end roads.

Recreation Management Actions

Vehicle use would continue to utilize the existing (open) roads and ways located in both WSAs. The current off-highway vehicle designation would continue to close vehicle use on 7.5 miles of ways and prohibit general cross-country travel for this area. Current recreation use is estimated to be 26,000 visitor days per year. Most of this use would continue to use motor vehicles for access via existing (open) roads and ways.

Summary

Table 1 summarizes the projected management actions under each alternative.

Table 2 summarizes the environmental consequences of each alternative.

3. Affected Environment

This section discusses only those activities or resources which influence the character of the study area, or that may be affected by the alternatives.

Wilderness Values

Naturalness

The High Steens WSA and the Little Blitzen Gorge WSA appear to be in an outstanding natural condition. None of the unnatural features within the study areas are very noticeable.

The majority of the developments in the High Steens WSA occur in the southeast corner of the study area. There are 28 ways totaling 38 miles, five water developments, 11 fences totaling 9 miles and several locations of mining activity, which include three cabins. It is estimated that approximately 4 percent of the study area is influenced by these features.

There is a concentration of ways in the southeast corner of the WSA, but the rough topography reduces the influence of these developments on the naturalness of the area. Topographic relief minimizes the influence of the ways on the west side of the rim. At present, approximately 4 miles of ways (not shown on the maps for this appendix) are closed to motorized vehicles under the Steens Mountain Recreation Area Management Plan.

Of the 11 fences in this WSA, none are longer than 1.5 miles. All of the fences are screened by topography and vegetation and have a minimal influence on the area.

Three water developments are concentrated in the southwest corner. One is a developed reservoir and two are developed springs. All are small and relatively unnoticeable. The rugged topography is the primary screening factor.

There are several places in the southeastern portion of the study area where there are substantial mining scars. One of the mines has a small tramway built on the hillside which was used to remove ore-bearing rock. The mining activity occurred along Little Alvord Creek, Pike Creek, Dry Creek and Indian Creek. In general, these scars influence only a relatively small portion of the WSA, due to their location within canyons or on east-facing slopes away from higher elevations from which they can be viewed.

Three cabins occur near the past mining activity; one older cabin sits north of the Weston Place on Indian Creek and the other places are on Pike Creek and Little Alvord Creek. All three are in the bottom of drainages and they can be seen only from the immediate vicinity.

The most noticeable outside sights and sounds are the boundary roads and the traffic on them. On the east face of Steens Mountain, there are 11 miles of dead-end roads winding up the creek drainages. They have minimal influence on the surrounding area, due to the steep topography of the drainages. On the top of the mountain, there are 3 miles of dead-end roads that are used by sightseers. One road leads to the radio facility on top of the mountain. This tower and the roads are substantially unnoticeable from inside the WSA. Only from the rim, just above the road, can the development be partially seen. This road is well-traveled in the summer by sightseers and anglers traveling to Wildhorse Lake. The other small road leads to the overlook of Kiger Gorge. It is also well-traveled during the summer months.

There are numerous roads, ways and other developments within a couple miles of the study area boundary that can be seen from certain high locations. The locations are high above and a substantial distance from the developments, so the influence of the outside sights on the visitor's perception of the naturalness of the WSA is light.

The Little Blitzen Gorge WSA has very few unnatural features. There are five vehicle ways totaling 5 miles, two reservoirs, one trail and remnants of four cabins and a corral. It is estimated that approximately seven percent of the area is influenced by these features.

The vehicle ways are seldom used and barely noticeable. Currently, 3.5 miles of ways (not shown on the map of this appendix) are closed under the Steens Mountain Recreation Area Management Plan. The only reservoir is small and substantially unnoticeable.

Trails used by hikers and horseback riders runs along the river and up two drainages on the north rim of the gorge. These trails are screened by topography or vegetation, which reduces the trails overall visibility.

The four historic cabins and the corral are in the bottom of Little Blitzen Gorge. These structures are rapidly deteriorating since they are no longer used. They are of historic interest and enhance the study area.

Outside sights and sound, primarily from the boundary roads, have only a slight effect on the study area. Approximately two-thirds of the WSA boundary is formed by the Steens Mountain Loop Road, which is heavily used during the summer months of July, August and September. The road itself influences only small portions of the study area.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

The High Steens WSA and the Little Blitzen Gorge WSA offer outstanding opportunities for solitude.

Opportunities for solitude in the High Steens WSA are enhanced by the varied and rugged topography. The extreme difference in elevations is the major screening factor. It is possible in many places in the WSA to be within a half-mile of a boundary road or dead-end road and feel totally isolated. The gorges of Kiger Creek, Wildhorse, Little Wildhorse, Big Indian, Little Indian and the other drainages provide excellent opportunities for isolation from all other parts of the WSA and boundaries. The east side of the study area is completely screened from the west side because of the steep escarpment face.

Vegetative screening also enhances opportunities for solitude in some areas. In the canyons, aspen, willow and other riparian species provide screening within the immediate vicinity of the creeks. Junipers growing on the steeper slopes provide some screening.

However, the study area as a whole does not contain enough vegetation to significantly enhance opportunities for solitude.

The long and narrow shape of the Little Blitzen Gorge WSA is not conducive to solitude. However, the unusual topographic features provide opportunities for solitude. Nearly all of the study area has topographic screening.

The majority of the vegetative screening occurs along the river corridor. Tall stands of black cottonwood and aspen grow along the Little Blitzen River and, combined with mountain mahogany and aspen growing farther upslope away from the river, provide excellent opportunities for solitude. The plateau area above the gorge has large thickets of aspen, providing opportunities for solitude where it is not provided by the area's topography.

Opportunities for primitive recreation activities in the High Steens and Little Blitzen Gorge WSAs are outstanding. The primitive recreation activities include day hiking, backpacking, horseback riding, hunting, fishing, sightseeing and photography.

Opportunities for day hiking are outstanding in both WSAs. In the High Steens WSA, the east side provides many interesting and rugged drainages to hike. Very few of these canyon areas are easily accessible from the top of the mountain, but nearly all of them are accessible from the mouth of the canyons at the lower elevations. Wildhorse Creek and Willow Creek provide very challenging hikes. Kiger Rim and the gorges on the west side, Little Indian Creek, Big Indian Creek and McCoy Creek also provide day hiking opportunities.

In the Little Blitzen Gorge WSA, the bottom of the gorge provides the best day hiking opportunities. Water, vegetation and wildlife are all abundant and are attractive features. Three established trails with varying degrees of difficulty provide access routes to the bottom of the gorge. Overall, this area provides challenging routes for the hiker.

Opportunities for backpacking abound in both WSA. The High Steens WSA offers the most variety of areas in which to backpack. The eight major canyons on the east, the Wildhorse Canyon, Kiger Gorge and the west gorges all contain spectacular scenery, ranging in variety from lush canyon bottoms to the towering rock escarpments, and provide excellent places to backpack. Level camping spots are numerous in all but the canyons on the east face. These east side canyons contain level spots, but they are limited to the creek floodplain and the small glacial cirques at the head of the creeks where flat areas are much more abundant. A portion of the Desert Trail, running from Big Indian Canyon down Little Wildhorse and Wildhorse Canyons provide excellent backpacking opportunities. Many of these same trails and routes can also be used by horseback riders. However, the opportunities would be limited to those routes which are not as steep and difficult.

In Little Blitzen Gorge WSA, backpackers and horseback riders would use the same areas as day hikers. Level camping areas exist all along the creek bottom. Water is abundant, but requires purification. The trails are suitable for horseback riding.

Game species which can be hunted in the High Steens WSA include mule deer, antelope, bighorn sheep, elk and upland game birds. The entire area is in deer, elk and antelope summer range, providing opportunities for hunting all of these animals. Chukar hunting is best on the lower east face of the Steens where excellent bird habitat exists.

Mule deer, antelope and elk are the only game species in the Little Blitzen Gorge WSA which provide hunting opportunities. Deer populations are large enough for good hunting throughout the area.

Opportunities for fishing are outstanding in both WSAs. In the High Steens WSA, there is fishing for redband trout in Big Indian Creek, Little Indian Creek, Kiger Creek, McCoy Creek and their tributaries. Hybrid Lahontan cutthroat trout-rainbow trout occur in Wildhorse Creek and Wildhorse Lake is stocked with Lahontan cutthroat trout. In Little Blitzen Gorge WSA, the Little Blitzen River is managed for wild trout.

Sightseeing and photographic opportunities abound in these WSAs. In the High Steens WSA, the immense vistas include Beatys Butte and Hart Mountain to the west, the Pueblo Mountains to the south and the Alvord Basin, Sheepshead Mountains and Trout Creek Mountains to the east. Within the study area, the glaciated gorges with their U-shaped valleys and the rugged and sheer rock escarpments create fascinating views for both sightseeing and photography. The gorge in the Little Blitzen Gorge WSA, with its rocky, rugged escarpments and rich green bottoms of aspen and riparian vegetation, is very attractive. A different perspective is provided from within the canyon, where the rock spires tower above on the narrow canyon walls and aspen groves cling to the steep slopes.

Special Features

The special features of the High Steens and Little Blitzen Gorge WSAs substantially enhance the areas' wilderness values. Geology, vegetation, wildlife and scenic qualities are special features of both WSAs. Historical values are a special feature of the Little Blitzen Gorge WSA.

The geology of Steens Mountain is the dominant special feature of both WSAs. Displacement following the northwesterly trending faults has separated the mountain into three distinct topographic units known as Northern Steens, High Steens and Southern Steens. The High Steens rises along a north-south scarp 5,500 feet above the floor of the Alvord Desert, reaching an elevation of 9,733 feet. Bounded on the north and south by northwest-trending fault scarps, the High Steens stands around 2,000 feet above the other two segments of the mountain.

The eastern escarpment of Steens Mountain exposes a thick succession of volcanic rocks and is a major topographic feature in southeastern Oregon.

Pleistocene glaciers have been the main sculpturing agent on the upper part of the High Steens, and on the adjacent parts of the Northern and Southern Steens, into which glaciers originating in the High Steens flowed. Kiger Gorge and the canyons of the Little Blitzen River, Big Indian Creek, Little Indian Creek, Wildhorse Creek and Little Wildhorse Creek were all gouged out by valley glaciers that originated within a few miles of the summit of the mountain and flowed down former stream valleys. The heads of the glaciated canyons lie within a distance of about 6 miles of each other and are accessible by short hikes from the Steens Mountain Loop Road and side roads.

The heads of the glaciers are marked by small basins, or cirques. Only thin walls separate the heads of Little Blitzen and Big Indian Canyons from cirques east of the rim. At Kiger Gorge, the rim was breached where the head of the Kiger glacier met the head of a glacier in the valley of Cottonwood Creek on the east scarp.

Lake basins on the High Steens were formed by glaciation and are of two types. Fish Lake and other smaller lakes nearby are in depressions dammed at the western end by moraines. Wildhorse Lake, in the cirque of Wildhorse Canyon, and Little Wildhorse Lake, in the cirque of Little Wildhorse Canyon, are glacially eroded depressions in the bedrock.

Little Blitzen Gorge, the primary geologic feature of the Little Blitzen Gorge WSA, was carved by glaciers that originated at the top of the Steens fault block and flowed west down a former stream valley. Only a thin wall separates the head of the gorge from the east escarpment of Steens Mountain. Weathered boulders remain from the glacial action and are scattered in the canyon and at the mouth of the valley. The deep, narrow U-shaped gorge displays fascinating geologic phenomena.

Scenic quality is a special feature common to both WSAs. Little Blitzen Gorge WSA and most of the High Steens WSA contain outstanding scenery.

Thirteen plant species of special interest are known to occur in the High Steens and Little Blitzen Gorge WSAs. (See the Vegetation section for further description of these plants.)

Several species contribute to making wildlife a special feature in the High Steens WSA. Bighorn sheep range over the east face of the mountain and occasionally may be seen there. Sage grouse are found in both WSAs. California bighorn sheep and sage grouse are candidates for Federal listing as threatened or endangered. There is crucial deer winter range on the lower slopes of the escarpment. Whitehorse cutthroat trout, proposed for Federal listing as a threatened or endangered species, was successfully established in Mosquito Creek in 1971. Pike, Little Alvord, Big Alvord, Cottonwood, Willow and Little McCoy Creeks have also been stocked with this trout species. Both WSAs contain redband trout, a native fish of special concern because of its limited range. This species is also a candidate for Federal listing as threatened or endangered (see Map 8).

Steens Mountain, including High Steens and Little Blitzen Gorge WSAs, is one of only two eastern Oregon locations where pikas are found. Steens Mountain also provides the only eastern Oregon habitat for the northern water shrew.

Additionally, Steens Mountain, in these areas, is an important raptor foraging area and raptor nests have been located in both WSAs. Sage grouse, a candidate for Federal listing as threatened or endangered, summer in the sagebrush habitat on top of Steens Mountain in both WSAs.

Four old homesteads located in the bottom of little Blitzen Gorge have nearly rotted away, but are still visible. Frank Kuney, a sheep rancher of the 1920's, built a working corral near the principal meadow of the gorge. Today it stands in disrepair, but it was used through the 1960's. These historical features enhance the wilderness values of the Little Blitzen Gorge WSA.

Diversity in National Wilderness Preservation System (NWPS)

According to the Bailey-Kuchler system of classifying ecosystems, the Little Blitzen Gorge WSA and the High Steens WSA are in the Intermountain Sagebrush Province. The potential natural vegetation is saltbush-greasewood, sagebrush-steppe, or alpine meadows and communities.

Fifteen of the plant communities listed in the Basin and Range section of the Oregon Natural Heritage Plan occur in these WSAs. Nine of them are common to both WSAs. These are big sagebrush/Idaho fescue, big sagebrush on Steens Mountain, mountain mahogany community in the Southern Basin and Range, bitterbrush-sagebrush-snowberry on Steens Mountain, aspen groves, snowbrush and bittercherry community complex, high elevation fescue grasslands, alpine communities on Steens Mountain including snow-deflation and moderate snow-cover communities and alpine communities on Steens Mountain, including downslope snow accumulation areas and upper cirque communities.

There are four plant communities present in the High Steens WSA, but not in the Little Blitzen Gorge WSA. There are big sagebrush/bluebunch wheatgrass, big sagebrush-greasewood, low sagebrush/Idaho fescue and low sagebrush on Steens Mountain. Communities found only in the Little Blitzen Gorge WSA are western juniper/big sagebrush-bitterbrush and black cottonwood riparian areas.

The two study areas are within five hours' driving time of one standard metropolitan area with a population over 100,000: Boise, Idaho.

Energy and Mineral Development

The geology, energy and mineral resources of the High Steens WSA and the Little Blitzen Gorge WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, correlating rock units in the WSA with similar environments in areas known to contain mineral resources. Additional information was obtained by evaluating a geochemical sampling program conducted by the State of Oregon Department of Geology and Minerals Industry (DOGAMI). Technical details of the evaluation are in a mineral resources assessment report, Steens Mountain geologic resource area (GRA), Harney County Oregon, prepared by TERRADATA (a consulting firm under contract with BLM) and in a BLM report on Fields GRAs.

The WSA is within the Steens Mountain GRA which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level). A description of the rating system is provided in the Statewide EIS volume.

Table 3 shows the energy and mineral classifications in the study area. Map 7 shows where energy and mineral resources have moderate or high potential for occurrence in the WSA.

The majority of rocks exposed in these WSAs are Tertiary volcanics. In both WSAs, outcrops are predominantly rocks of the Steens Mountain Basalt formation, approximately 15 million years old, consisting of a thick sequence of thin, multiple flows of basalt and andesite.

The oldest of the volcanic formations is the Alvord Creek Formation, in which fossil leaves have been found. This unit outcrops on the eastern side of the High Steens WSA and does not occur in the Little Blitzen Gorge WSA. Also, limited to the eastern side of the High Steens WSA are exposures of the Pike Creek Formation composed of rhyolitic volcanic rocks which have commonly been associated with mineralization. Several mining claims and mineral occurrences are located near this formation. Quaternary alluvial deposits are scattered throughout both WSAs, but are mainly present along the eastern edge of the High Steens WSA.

Energy Resources

The southeastern side of the High Steens WSA has a high potential for the occurrence of geothermal resources. The Alvord KGRA borders the study area on the east. Following legal subdivisions, the KGRA boundary runs along the extreme eastern and southeastern side of the study area at the base of the mountain. Only a relatively small portion of the study area falls within the KGRA boundary. The area within the WSA rated as having a high potential for the occurrence of geothermal resources follows the same boundary as the KGRA.

As of October 16, 1987, three geothermal leases had been issued in the High Steens WSA. There were also 19 oil and gas leases, covering 60,973 acres. There were no geothermal leases in the Little Blitzen

Gorge WSA as of October 16, 1987; there were two oil and gas leases covering 5,223 acres. Oil and gas has a low potential for occurrence throughout both WSAs, and there is indirect evidence to support this low rating.

Mineral Resources

Both WSAs have high to moderate potential for the occurrence of metals. In the High Steens WSA, results of the DOGAMI geotechnical survey indicates that the entire WSA has a high potential for the occurrence of mercury, copper, gold silver and molybdenum mineralization. Two mines in the Pike Creek formation have had past production records of minor amounts of mercury. There is also a moderate potential for the occurrence of bentonite and zeolites near the eastern boundary of the study area.

In the Little Blitzen Gorge WSA, the DOGAMI geochemical survey showed anomalies of zinc, copper, mercury, nickel and cobalt in the stream sediments of the Little Blitzen River. Most of the WSA has been rated as having a high potential for the occurrence of these metals, while the far western portion is rated as having a moderate potential for occurrence of these same metals. There is also a moderate potential for the occurrence of bentonite and zeolites near the eastern boundary of the study area.

Parts or all of nine mining claims are located within the High Steens WSA, predominantly in the eastern portion of the study area. The mining claims are associated with mercury and uranium. There were no mining claims in the Little Blitzen Gorge WSA as of October 16, 1987.

Vegetation

There is a wide variety of plant communities in the High Steens WSA and Little Blitzen Gorge WSA due to the varied topography. The gorges and canyons, the high elevation slopes and the steep east face all contain different complexes of communities. The following communities occur in both High Steens and Little Blitzen Gorge WSAs.

Riparian zones occur along the stream bottoms of the gorges as well as along the many small feeder streams. The dominant species include alder, black cottonwood, willow, dogwood, chokecherry and aspen. Many species of sedges, rushes, grasses and forbs occur along the streams. The ecological status of riparian habitat on public land along Kiger Creek, McCoy Creek, Big Indian Creek, Little Indian Creek, Wildhorse Creek and their tributaries is 25 percent early seral, 33 percent mid-seral, and 32 percent late seral. Most streams flowing off the east side of Steens Mountain are so steep and rugged that cattle have not influenced riparian vegetation except in the lower reaches. It is estimated that 80 percent of the riparian vegetation is in late seral or in the potential natural community and 20 percent is mid-seral along the east side of Steens Mountain.

Western juniper and big sagebrush form a community on the rocky, lower elevation sites above the stream bottoms. The estimated ecological status is late seral. The probable major natural communities are big sagebrush and bluegrass.

A big sagebrush/bunchgrass community occurs on the slopes above the riparian zones. The estimated ecological status is late seral. The major potential natural community species are bluegrasses, needlegrasses, snowberry and big sagebrush.

The steepest portions of the canyon walls, the rocky rims and talus slopes contain a community composed primarily of mountain mahogany. Snowberry and creambush oceanspray are also common. Other species found include Sandberg's bluegrass, needlegrass, squirreltail, big sagebrush and western juniper. The estimated ecological status is late seral and the major potential natural community species is mountain mahogany. Rooster Comb RNA, in the Little Blitzen Gorge WSA, provides management and protection for a mountain mahogany community and the associated black cottonwood riparian area.

On the flat western slopes and ridges between the gorges, the community is mountain big sagebrush/grass. In some areas, small pockets of low sagebrush also occur. The estimated ecological status is mid-seral. The primary potential natural community species are western needlegrass, bluegrasses and mountain big sagebrush.

Aspen is the dominant vegetation on the north slope of Little Indian Canyon. They are also scattered throughout the mountain big sagebrush community on the small, northern exposures. The aspen groves have a limited understory of bluegrasses, mountain bromes and shade-tolerant forbs. The estimated ecological status of the aspen groves is mid-seral. The major potential natural community species are aspen and the associated shrubs.

On the more exposed ridgetops, at the head of the gorges, and along the east rim of Steens Mountain, the plant community is subalpine grassland. The major species are rough fescue and Idaho fescue.

The estimated ecological status is mid- to late seral. The primary potential natural community species are rough fescue and Idaho fescue. The East Kiger Plateau RNA, in the High Steens WSA, provides management and protection for a high elevation fescue grassland community.

Meadows are interspersed throughout the riparian zone, the subalpine grasslands and in the cirques of the gorges. The vegetation growing in meadow areas is bluegrasses, sedges, rushes, slender wheatgrass, mat muhly and a variety of forbs. The estimated ecological status is mid- to late seral, and the primary potential natural community species are bluegrasses and slender wheatgrass.

In the High Steens WSA, the complex of vegetation communities on the exposed east side of Steens Mountain, including the slopes of Wildhorse Canyon, is somewhat different than the west side. The drainages are steeper and the area is very rocky. The east face is inaccessible to livestock, so it is relatively undisturbed. The ecological status is estimated to be late seral, and the probable potential natural community species are those currently present.

Two more communities occur at lower elevation in the eastern and southern portions of the High Steens WSA. These are big sagebrush/bunchgrass and western juniper/bunchgrass.

Little Blitzen RNA protects six plant communities, including aspen groves, late-lying snowbed areas, high elevation fescue grasslands, a mid- to high-elevation vernal pond, a stream system originating in the subalpine, and other alpine communities on Steens Mountain, including snow-deflation and moderate snow-covered communities. Several plant species of special interest also occur in this RNA.

The South Fork Willow Creek RNA protects alpine communities including snow accumulation areas and upper cirque communities. Little Wildhorse Lake RNA protects a pristine, high elevation lake. Steens Scenic ACEC contains many plant communities. It contains glacial cirques and valleys, as well as high mountain lakes, ponds and valleys, all of which provide unique habitats for alpine communities. Many of the plant species of special interest in the WSAs are located in the Scenic ACEC.

The High Steens and Little Blitzen Gorge WSAs contain a significant concentration of plants of special interest. There are two species in the High Steens WSA which are candidates for Federal listing as threatened or endangered. The two plant species are *Castilleja steenensis* (Steens Mountain paintbrush) and *Botrichium crenulatum* (Crenulate moonwort). The other plants of special interest are on List 2 of the Oregon Natural Heritage Plan's "Rare, Threatened and Endangered Plants and Animals of Oregon" (1987). Table 4 lists these latter species and in which WSA they are found.

Wildlife

Both the High Steens WSA and Little Blitzen Gorge WSA have a good variety of wildlife habitat and diverse fauna. Glacial cirques, talus slopes, high mountain lakes, ponds and streams and high elevation fescue grasslands are special wildlife habitats found within these two WSAs.

The upper elevations of Steens Mountain are prime summer mule deer habitat, with a good interspersion of forage, cover and water. The lower slopes on the east side of Steens Mountain, within the High Steens WSA, are crucial deer winter range for about 10 percent of the deer in the Steens Mountain Wildlife Management Unit.

Antelope range onto the subalpine habitat of the upper elevations of Steens Mountain during the summer. Antelope range yearlong on gentle slopes of the lower foothills on the east side of Steens Mountain.

Rocky Mountain elk range into the WSAs at the upper elevations during the summer.

The steeper slopes on the east side of Steens Mountain, in the High Steens WSA, provide yearlong habitat for an estimated 250 California bighorn sheep, candidates for Federal listing under the Endangered Species Act. Most of the bighorn use occurs between Wildhorse Canyon and Castle Rock Creek. Occasionally, bighorn sheep are seen north to the House Creek area.

In the High Steens WSA, ODFW periodically stocks Wildhorse Lake with Lahontan cutthroat trout by helicopter. Hybrid Lahontan cutthroat-rainbow trout are found in 8 miles of Wildhorse Creek and the lower portion of Little Wildhorse Creek including public land and private property.

In the High Steens WSA, Whitehorse cutthroat trout, proposed for Federal listing as a threatened or endangered species, were released into Mosquito Creek in 1971, and in Pike Creek, Little Alvord Creek, Big Alvord Creek, Cottonwood Creek, Willow Creek and Little McCoy Creek in 1980. Fish were still present in Mosquito Creek in 1979. Fish were present in Pike Creek, Little Alvord Creek, Cottonwood Creek and Little McCoy Creek in 1983. An estimated 8 miles of stream in the WSA contains Whitehorse cutthroat trout. Fish were not present in Big Alvord Creek and Willow Creek. Once the creeks have a viable population, they would not be stocked again. This fish is endemic to only two streams in the Trout Creek Mountains, but may have been part of a larger population, or subspecies, which originally inhabited the ancient lake that filled the Alvord Basin.

Redband trout, a candidate for Federal listing as threatened or endangered, are found in 8.4 miles of Little Blitzen River in the Little Blitzen Gorge WSA and 30 miles of Big Indian Creek, Little Indian Creek, Dingle Creek, McCoy Creek and Kiger Creek in the High Steens WSA. These trout are native to Steens Mountain and other streams but have a limited range in Oregon.

Riparian habitat is found along 9 miles of stream in the Little Blitzen WSA and 80.5 miles of stream in the High Steens WSA. Of this, 73 miles are on public land and all of it in the Little Blitzen WSA is on public land.

Brewer's sparrow, dipper, robin, yellow-rumped warbler, yellow-breasted sapsucker, green-tailed towhee, Rufous sided towhee, MacGillivary's warbler, beaver, wandering garter snake and Pacific tree frog are found along the streams. Beaver utilize the Little Blitzen River, Big Indian Creek, Little Indian Creek, McCoy Creek, Dingle Creek, Kiger Creek and Wildhorse Creek.

Upland game birds include sage grouse, valley quail and chukars. Sage grouse are found on top of the mountain during the summer where there is adequate cover. ODFW does annual sage grouse brood counts along roads in two locations, one in the High Steens and one in the Little Blitzen Gorge WSA. Sage grouse is a candidate species for Federal listing as threatened or endangered. Steep slopes on the east side of Steens Mountain in the High Steens WSA have excellent chukar populations.

The upper elevations of Steens Mountain receive heavy use by summering raptors. Red-tailed hawks, golden eagles, marsh hawks, prairie falcons and American kestrels are the most commonly observed species. The most heavily used areas are the big sagebrush and subalpine habitat types. This is an excellent area for viewing raptors. Golden eagles and prairie falcons nest on the cliffs. One prairie falcon nest has been located in the Little Blitzen Canyon, and one golden eagle nest has been found in the Wildhorse Canyon.

Common songbirds vary with habitat. In the High Steens WSA, the lower slopes bordering the edge of the Alvord Desert host species such as horned lark, Brewer's sparrow, black-throated sparrow, sage thrasher and western meadowlark. The subalpine habitat in both WSAs is breeding habitat for Brewer's blackbird, water pipit, rock wren, horned lark and other species. In 1981, black rosy finch and gray-crowned finch were observed breeding in the subalpine area of Steens Mountain. This is the only area where both species have been observed breeding in the lower 48 States, except for the Bitterroot Mountains in Montana.

Belding ground squirrel, golden-mantled ground squirrel, sage vole, least chipmunk and northern pocket gopher are common small mammals found on top of Steens Mountain in both WSAs. Great Basin pocket mouse, deer mouse, Ord's kangaroo rat, mountain cottontail and little brown myotis (bat) are species found along the east edge of the High Steens WSA.

Two mammal species uncommon in Oregon, the pika, Ochotoma princeps, and the northern water shrew, Sorex palustris, are found in both WSAs. The pika is found on talus slope and only at two locations in southeastern Oregon, Steens Mountain and Warner Rim. The northern water shrew has only been found in one location in southeastern Oregon, on Steens Mountain. A subspecies of tiger beetle, Cicindele montane chamberlaini, is endemic to the area.

Watershed

The High Steens WSA contains approximately 80.5 miles of perennial streams. Poor accessibility to those streams by livestock has kept many of those streams in pristine condition, with very few areas of active erosion. The lower portion of Wildhorse Creek and the upper portions of McCoy and Big Indian Creeks contain some bank erosion, but they are presently healing due to improved livestock management. Water quality is good before and after the spring runoff period.

The Little Blitzen Gorge WSA contains approximately 9 miles of perennial streams, made up entirely of the Little Blitzen River and its tributaries. Several areas of bank erosion are presently healing due to the management of livestock within this WSA. Water quality is good before and after the spring runoff period.

Livestock Grazing

Portions, or all, of six grazing allotments are located in the High Steens WSA and portions of two grazing allotments are located in the Little Blitzen Gorge WSA. Table 5 shows the estimated grazing use levels and the seasons of use in the two WSAs.

Existing livestock developments include three reservoirs, two developed springs and 9 miles of fence.

Grazing operators use motorized vehicles frequently on some of the ways in the northern and southern portions of the High Steens WSA, and on part of the Steens Mountain Loop Road. This access is necessary for salting, livestock monitoring and hauling horses. Horses are used to move and gather livestock.

Recreation Use

Recreation use in the High Steens WSA and Little Blitzen Gorge WSA includes hunting, fishing, sightseeing, day hiking, backpacking, camping and horseback riding. Mule deer, antelope, Rocky Mountain elk, California bighorn sheep and upland game birds are hunted in these WSAs.

Deer trophy hunting is very popular. It is estimated that deer hunting visitor use is high in the High Steens WSA and moderate in the Little Blitzen WSA. Antelope hunting is poor and accounts for low visitor use in the High Steens WSA.

Bighorn sheep, elk and chukar hunting occur primarily in the High Steens WSA. Bighorn sheep hunting is excellent. There is a high success rate and these hunters account for low visitor use because of the limited number of hunting tags available. In the fall of 1983, over 30 elk were harvested on Steens Mountain. Hunting pressure was spread out, but a majority of the use occurred in the High Steens WSA. The amount of elk hunting is limited by the number of hunting tags issued. Chukar hunting is particularly good along the east side of the WSA, and high visitor use is attributed to this activity.

Fishing in the High Steens WSA and Little Blitzen Gorge WSA accounts for high visitor use, primarily in the High Steens WSA, with moderate use along the Little Blitzen River in the Little Blitzen Gorge WSA. Physical access to many fishing locations is difficult.

Sightseeing and day hiking are very popular activities. Driving for pleasure is the number one form of recreational activity on Steens Mountain. Over 20,000 visitor days per year can be attributed to sightseeing. There are spectacular views throughout both WSAs. Day hiking is commonly associated with sightseeing. Many people hike along the east rim, parking along the Steens Mountain Loop Road then hike to the east rim for the view. Hiking along Kiger Rim and Wildhorse Lake is also popular.

An off-highway vehicle designation, in conjunction with the Steens Mountain Recreation Area, closed 7.5 miles of ways to vehicle use, as well as prohibiting cross-country travel.

The highest use area in the Little Blitzen Gorge WSA is along the valley bottom where water, vegetation and wildlife are most abundant. Three established trails provide access to the river. At the mouth of the canyon, a trail traverses the slope from the South Loop Road to the river and then follows the river up into the gorge. This is the most popular, and heavily used, trail. From Wet Blanket Springs on top of a plateau at the northeastern part of the gorge, another trail switchbacks down a steep slope to Wet Blanket Creek and follows the creek to the Little Blitzen River. The third trail switchbacks down the escarpment to the river from a cabin on private land near the center of the north rim.

All of the areas used for day hiking are also used for backpacking, camping and horseback riding. The level of use is not known, but it is substantial and appears to be increasing.

Hunting, fishing and sightseeing are all associated with motor vehicles. Hunters use the roads and ways throughout the area. Anglers use the Steens Mountain Loop Road for access to the most popular fishing areas, then hike to their destination. Sightseeing is heavily dependent upon motor vehicles. These recreationists commonly drive the entire Loop Road. The short roads to Kiger Gorge, the Steens East Rim and Wildhorse overlook also receive heavy use.

Overall recreation use of the two WSAs amounts to approximately 26,000 visitor days per year.

Local Personal Income

Livestock use at the current level of 6,156 AUMs and recreation use totaling 26,000 visitor days per year are the primary resource outputs that generate economic activity in the WSAs. Local personal income generated annually from these existing use levels amounts to approximately $73,872 for livestock grazing and $312,000 related to recreation use of the WSAs, for an overall total of $385,872. The Statewide EIS volume discusses the term local personal income and how income figures have been derived.

4. Environmental Consequences

Introduction

This section discusses the environmental consequences of implementing each of the alternatives. Resources and activities not significantly affected by any of the alternatives are not discussed. The Statewide volume discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

High Steens WSA:

Recommended suitable for wilderness: 69,740 acres
Recommended nonsuitable for wilderness: 0 acres

Little Blitzen Gorge:

Recommended suitable for wilderness: 9,400 acres
Recommended nonsuitable for wilderness: 0 acres

Combined totals for both WSAs:

Recommended suitable for wilderness: 79,140 acres
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

All of the WSA would be designated wilderness, and wilderness values within the entire 79,140 acres would be protected by legislative mandate. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. Special features, including varied geology, outstanding scenic values, a high concentration of plant species of special interest, several wildlife features of special interest including bighorn sheep habitat, redband trout habitat, Whitehorse cutthroat trout habitat, pika and northern water shrew; as well as historical and cultural values would be protected.

Naturalness

The naturalness of the WSAs' immense scenic qualities, deeply-carved glacial canyons with cool green riparian zones lying in the canyon depths and varied elevation features would be slightly enhanced by the closure of 30.5 miles of ways. This closure would allow the ways to naturally revegetate and to blend into an unbroken, natural landscape.

The maintenance of three existing reservoirs and two developed springs would require heavy equipment access on the 30.5 miles of ways approximately once every 5 to 10 years for each development. This infrequent amount of use would not prevent the ways from revegetating.

Solitude

Opportunities for solitude provided by the deeply-carved canyons, varied geological forms and varied vegetation would improve slightly with the closure of 30.5 miles of ways and the reduced use of vehicles in the area.

Maintenance of the existing three reservoirs and two developed springs would require the use of heavy equipment approximately once every 10 years for each facility. This maintenance activity would cause minor local impairment of solitude.

Primitive and Unconfined Recreation

The closure of 30.5 miles of ways to motorized vehicle use would increase the core area available to participate in primitive and unconfined recreation opportunities such as day hiking, backpacking, horseback riding, hunting, fishing, sightseeing and photography. The quality of hunting would improve with the closure and natural revegetation of ways. A more natural, primitive and wild setting would be provided.

Special Features

Eliminating motor vehicle use on 30.5 miles of ways would reduce potential impacts to the areas' special features. These impacts include impairment of scenic vistas, and minor seasonal disturbance to wildlife species and special plant species that inhabit the study area.

Conclusion: Wilderness designation of the entire 79,140 acres within the High Steens WSA and Little Blitzen Gorge WSA would result in the protection of the existing wilderness values and probable enhancement of those values.

Impacts on Energy and Mineral Development

Wilderness designation would close 71,240 acres within the High Steens WSA and Little Blitzen Gorge WSA to mineral entry. In this alternative, approximately 4,480 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under

Interrelationships. In the High Steens WSA, the 3,420 acres of private and State lands and the mineral estate of split-estate lands would still be open to mineral development.

Energy Development

Energy exploration and development would be precluded on 71,240 acres within both WSAs. The High Steens WSA contains 6,106 acres of land with a high potential for the occurrence of geothermal resources, along with abundant direct and indirect evidence to support this rating. Development of one projected 10-megawatt geothermal powerplant would be precluded by wilderness designation.

Conclusion: Wilderness designation would result in foregone energy production from one projected 10-megawatt geothermal power plant.

Mineral Development

Projected exploration for copper, mercury, molybdenum, silver and gold would be precluded on 71,240 acres. It is predicted that exploration, if the area were to remain open to mineral entry, would prove the existence of an economical ore body for the production of gold, silver and mercury. One open-pit mine, producing gold, silver and mercury would result from this discovery. Development of this mine would be precluded by wilderness designation.

Exploration could occur on 3,420 acres of private and State lands and the mineral estate of split-estate lands. However, no such exploration is postulated due to the small size and isolated nature of these parcels.

Conclusion: Wilderness designation would result in foregone production of mercury, gold and silver from one projected open-pit mine.

Impacts on Vegetation

Wilderness designation would not introduce any significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the vegetative section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid- to late seral stage overall.

The 30.5 miles of existing ways, once closed to vehicle use, would naturally revegetate with annual forbs and grasses within approximately two growing seasons. Sagebrush would become established in these ways within 5 years.

Areas designated wilderness would not be subject to surface-disturbing activities. Vegetation dependent upon the existing, undeveloped environment would thus be maintained.

Conclusion: Overall, existing vegetation would remain unchanged.

Impacts on Wildlife

Wildlife habitat for a summer population of 2,500 deer, 50 elk, 150 antelope and 400 bighorn sheep and a winter population of 1,000 deer, 30 antelope and 400 bighorn sheep would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives for trout, big game and nongame species.

Table 6 shows the fish and riparian habitat in the area.

In the High Steens WSA, ODFW's trapping of bighorn sheep for relocation to other sites in eastern Oregon, including other WSAs, would be allowed to continue. This is an exceptional situation in which motorized equipment may be used for wilderness enhancing purposes where no other alternatives exist; it is the minimum necessary use and it will not degrade the area's wilderness character. ODFW and BLM fishery studies in both WSAs would be precluded due to the need for helicopter access and this data would not be available for fishery management.

Closure of 30.5 miles of ways would have little impact on big game species due to the light vehicle use that occurs. Less disturbance to valley quail and chukars from hunters would occur along the east side of Steens Mountain due to restricted vehicle use. Roads used for sage grouse brood counts would be left open and this use would continue.

In the High Steens WSA, fishery improvements proposed for Cottonwood Creek would not be allowed. The potential benefits of improved habitat for Whitehorse cutthroat trout would be foregone.

Efforts to reintroduce Whitehorse cutthroat trout into parts of Big Alvord Creek and Willow Creek would be allowed, since this species is believed to formerly inhabit these streams.

Conclusion: Wildlife habitat and populations would be maintained on 69,740 acres in the High Steens WSA and 9,400 acres within the Little Blitzen Gorge WSA. Proposals to improve habitat for whitehorse cutthroat trout would be foregone in High Steens WSA. The trapping of bighorn sheep would be allowed providing bighorns for introduction to other areas.

Impacts on Watershed

In the High Steens WSA, the majority of the watersheds would remain in their pristine condition, while portions of others, about 8 miles, presently in early or mid-seral status, would continue to improve under the present grazing management system. Water quality would remain good.

In the Little Blitzen Gorge WSA, bank erosion on 2 miles of the Little Blitzen River would continue to improve under the present grazing management system. Water quality in the river is good except during spring runoff.

Conclusion: Most of the perennial streams in both WSAs would stay in their present condition, and the remaining perennial streams would improve under the present livestock management system.

Impacts on Livestock Grazing

Based on preliminary studies, a reduction in livestock grazing use of 206 AUMs is projected, depending upon the results of monitoring. This reduction would result in a total livestock grazing use of 4,702 AUMs in the High Steens WSA. In the absence of new range improvement projects designed to increase available forage, the reduction would be necessary to offset a shortage of available forage in the Andrews allotment portion of this WSA. Livestock grazing use in the other five allotments in this WSA of 4,369 AUMs would remain unchanged.

Livestock grazing use would remain at the current estimated level of approximately 1,248 AUMs in portions of two grazing allotments located in the Little Blitzen Gorge WSA.

Vehicle use for checking livestock and range management would be precluded on 30.5 miles of ways, with a slight increase in operator costs and some inconvenience. Maintenance of the existing 9 miles of fence would be done on foot or by horseback and pack animals. Mechanized heavy equipment would be used on the average of once every 10 years to maintain two springs and three reservoirs.

Conclusion: Livestock grazing use would be reduced by 206 AUMs to 4,702 AUMs in the High Steens WSA and remain at 1,248 AUMs in the Little Blitzen Gorge WSA. Vehicle use on 30.5 miles of ways would be precluded, with some inconvenience and slight increase in costs to livestock operators.

Impacts on Recreation Use

This alternative would close 79,140 acres to vehicle-oriented recreation involving 30.5 miles of existing ways. By closing the 30.5 miles of existing ways, vehicle-oriented recreation would be substantially reduced.

Primitive recreation opportunities would be expected to increase moderately due to the closure of 30.5 miles of ways. Some vehicle-oriented recreation is expected to be displaced into other areas, but the majority of use will continue to use the Steens Loop Road for access into the area. Projected use patterns indicate that the current level of 26,000 visitor days per year would decrease over time, to 23,000 visitor days per year.

Conclusion: Recreation use would decrease from the current level of 26,000 visitor days per year to approximately 23,000 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would decrease by 206 AUMs. Overall recreation use would decrease by 3,000 visitor days per year.

Table 7 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $38,472 per year.

Conclusion: Annual personal income generated from resource outputs in the WSA would decrease by approximately $38,000.

Enhanced Wilderness

Recommended suitable for wilderness: 70,630 acres (assuming acquisition of 6,260 acres of private and State land) (54,800 acres public land - High Steens) (9,400 acres public land - Little Blitzen Gorge) plus 170 acres of public land outside the WSA)

Recommended nonsuitable for wilderness: 14,940 acres in High Steens WSA

Impacts on Wilderness Values

The enhanced wilderness alternative would add 70,630 acres to the NWPS, with acquisition of the 6,260 acres of private and State land and the acquisition of the mineral estate of 1,200 acres of split-estate lands. Acquisition of the private and State land and mineral estate would prevent potential disturbance from mineral exploration on these parcels. This would improve the wilderness qualities of the area. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. Special features, including scenic values associated with both WSAs, varied geology, a high concentration of plant species of special interest, several wildlife species of special interest, including bighorn sheep habitat, redband and Whitehorse cutthroat trout habitat, pika and northern water shrew; as well as historical and cultural values would be protected.

Wilderness values of the 14,940 acres recommended nonsuitable, including those associated with the special features in this part of the High Steens WSA (including scenic values, geologic values and wildlife values), would not be protected by wilderness designation and would be subject to disturbance from development of other resources.

Under this alternative, 9 miles of roads and 20.5 miles of ways would be closed to motorized vehicle use. The remaining 10 miles of ways would remain open.

Naturalness

The naturalness of the WSAs' immense scenic qualities, deeply-carved glacial canyons with cool green riparian zones lying in the canyon depths and varied elevation features would be slightly enhanced by the closure of 20.5 miles of ways and 9 miles of roads. This closure would allow the roads and ways to naturally revegetate and to blend into an unbroken, natural landscape.

The maintenance of three existing reservoirs and one developed spring would require heavy equipment access on the 9 miles of roads and 20.5 miles of ways approximately once every 5 to 10 years for each development. This infrequent amount of use would not prevent the roads and ways from revegetating.

In the area recommended nonsuitable, the projected energy and mineral exploration and development, including development of one open-pit mine and one 10-megawatt power plant, would result in approximately 310 acres of surface disturbance, which would visually impair naturalness on approximately 7,100 acres in the High Steens WSA.

The projected development of one spring in the nonsuitable area would cause 1 acre of surface disturbance and visually influence naturalness on approximately 25 acres.

Solitude

Opportunities for solitude provided by the deeply-carved canyons, varied geological forms and varied vegetation would improve with the closure of 20.5 miles of ways and 9 miles of roads and the reduced use of vehicles in the area.

Maintenance of one spring and three reservoirs every 10 years would cause minor local impairment of solitude.

Solitude opportunities would be affected by activities in the vicinity of the projected energy and mineral developments, which would influence a total of 7,100 acres. Construction of one spring development would cause short-term local impairment of solitude opportunities adjacent to this activity.

Primitive and Unconfined Recreation

Under the enhanced wilderness alternative, opportunities for primitive recreation would be maintained or improved in the area recommended suitable. The closure of 20.5 miles of ways and 9 miles of roads to motorized vehicle use would increase the core area available to participate in primitive and unconfined recreation opportunities such as day hiking, backpacking, horseback riding, hunting, fishing, sightseeing and photography. The quality of hunting would improve with the closure and natural revegetation of ways. A more natural, primitive and wild setting would be provided.

In the portion of the High Steens WSA recommended nonsuitable, projected energy and mineral developments would reduce opportunities for primitive and unconfined recreation activities in the vicinity of these developments.

Special Features

Eliminating motor vehicle use on 9 miles of roads, in addition to the 20.5 miles of ways, would reduce their influence on the areas' special features. These influences include impairment of scenic vistas, and minor seasonal disturbance to wildlife species and special plant species that inhabit the study area.

The habitat of chukars and nongame species would decline slightly due to geothermal and mineral development.

However, in the portion of the High Steens WSA recommended nonsuitable, projected energy and mineral exploration and development would result in wintering deer and bighorn sheep populations declining due to geothermal and mineral development; however, monitoring and mitigation measures would either avoid or minimize impacts.

Conclusion: Wilderness designation of the 70,630 acres (assuming acquisition of 6,260 acres of private and State land) would result in the protection of existing wilderness values and enhancement of those values. In the portion of the High Steens WSA recommended nonsuitable, projected energy, mineral and range developments would both directly and indirectly reduce wilderness values on approximately 7,200 acres, with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

Under the enhanced wilderness alternative, 56,642 acres, plus an additional 7,460 acres of private and State land and mineral estate proposed for acquisition, would be closed to mineral entry. In this alternative, approximately 6,528 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships.

Energy Development

Energy exploration and development would be precluded on 64,102 acres, assuming acquisition of the 6,260 acres of private and State lands and 1,200 acres of mineral estate of split-estate lands.

Within the High Steens WSA portion of the recommended wilderness area there are 1,516 acres of land with a high potential for the occurrence of geothermal resources. Exploration for geothermal resources would be precluded on these acres by wilderness designation.

Within the nonsuitable portion of the High Steens WSA, projected development of one 10-megawatt geothermal power plant would occur.

Conclusion: One 10-megawatt geothermal power source would be developed in the High Steens WSA outside the suitable wilderness recommendation.

Mineral Development

Under the enhanced wilderness alternative, 64,102 acres would be closed to mineral entry.

In most of this area, there is abundant direct and indirect evidence indicating a high potential for the occurrence of copper, gold, mercury, molybdenum and silver.

The suitable area contains seven mining claims, all within the High Steens WSA. Since there is a lack of activity on the claims and numerous claims have been dropped, no exploration or development of the existing claims is projected under this alternative.

The lands recommended nonsuitable would be open to mineral entry. Projected exploration would occur. Given the known past and currently active copper and molybdenum deposits in the world, this exploration is not expected to locate deposits of copper or molybdenum that would be economically competitive and subject to development.

Exploration is anticipated to prove the existence of an economical ore body for silver, gold and mercury. Within the eastern boundary area of the High Steens WSA north of Alvord Hot Springs, gold, silver and mercury would be mined within one projected 150-acre open-pit mine.

There is also known deposit of an industrial mineral, perlite, with an inferred reserve of 400,000 tons on the east escarpment of Steens Mountain near the Little Alvord Creek. However, no exploration or development of this resource is projected.

Conclusion: Projected development of one open-pit mine for gold, silver and mercury would occur in the High Steens WSA outside the suitable wilderness recommended area.

Impacts on Vegetation

In the area recommended suitable, the WSAs' vegetative composition, as described in the Affected Environment, would remain unchanged. The 20.5 miles of ways and 9 miles of roads closed to vehicle use would revegetate within five years.

The 70,630 acres designated wilderness would not be subject to surface-disturbing activities. Vegetation dependent upon the existing, undeveloped environment would thus be maintained.

In the nonsuitable area, the one spring development would disturb one acre of surface area and corresponding vegetative cover. This development would enhance watershed resources by protecting the source and overflow, allowing overall vegetation recovery within the WSAs.

The projected energy and mineral activity, consisting of a 150-acre open-pit mine and associated processing plant and a 10-megawatt geothermal plant, would directly disturb 310 acres and corresponding vegetative cover.

Conclusion: The vegetative composition would remain unchanged. The closure of roads and ways would allow 40 acres to revegetate over time. The projected energy and mineral activity would directly disturb vegetative cover on 310 acres.

Impacts on Wildlife

Wildlife habitat for a summer population of 2,500 deer, 50 elk, 150 antelope and 400 bighorn sheep and a winter population of 1,000 deer, 30 antelope and 400 bighorn sheep would be maintained under wilderness designation. Adequate forage and cover would be ensured in livestock allotment management plans in order to meet ODFW management objectives for trout, big game and nongame species. On public lands, about 90 percent of the deer summer range, 95+percent of the deer winter range, 80 percent of the antelope winter range, 75 percent of the riparian habitat, and 90 percent (37 miles) of trout habitat within the WSA would be in the area recommended suitable for wilderness. Table+6 shows the fish and riparian habitat in the area.

In High Steens WSA, ODFW's trapping of bighorn sheep for relocation to other sites in eastern Oregon, including other WSAs, would be allowed to continue. This is an exceptional situation in which motorized equipment may be used for wilderness enhancing purposes where no other alternatives exist, it is the minimum necessary use and it will not degrade the area's wilderness character. ODFW and BLM fishery studies, due to the need for helicopter access in both WSAs, would be precluded and this data would not be available for fishery management. In both WSAs, the acquisition of 6,260 acres of private property would contain deer, elk, antelope and bighorn sheep summer range and deer, antelope and bighorn sheep winter range. In High Steens WSA, riparian habitat on this private land occurs along 16.5 miles of stream. Redband trout are found in 4.6 miles of Dingle and Kiger Creeks, hybrid Lahontan cutthroat-rainbow trout are found in 2.5 miles of Wildhorse Creek and Whitehorse cutthroat trout are found in 2.5 miles of Mosquito and Cottonwood Creeks.

Closure of 9 miles of road and 20.5 miles of ways would have little impact on big game species due to the light vehicle use that occurs. Less disturbance to valley quail and chukars from hunters would occur along the east side of Steens Mountain due to restricted vehicle use. Roads used for sage grouse brood counts would remain open.

The projected mine and geothermal development, within the nonsuitable portion of the WSA, may affect achievement of ODFW's objectives for winter bighorn sheep and deer. Habitat destruction and influences from heavy equipment and other disturbances in the southeastern portion of the WSA would affect these animals. Bighorns are not usually tolerant of human disturbance and disturbance to bighorns and deer would stress both species and cause them to leave the area, to possibly inferior habitat. ODFW estimates a three percent reduction in deer numbers in the WSA (30 deer) and a five percent reduction in present bighorn numbers (12 bighorns) due to the projected mine. Similarly, ODFW estimates a two percent reduction in deer numbers in the WSA (20 deer) and a five percent reduction in bighorn numbers (12 bighorns) due to the projected geothermal plant.

Habitat for chukars and small mammals would be slightly reduced by mineral development. Chukars would move to other habitat. Small mammals would have their habitat destroyed over a small area, with a proportional loss of individuals.

In High Steens WSA, efforts to reintroduce Whitehorse cutthroat trout into parts of Big Alvord Creek and Willow Creek would be allowed, since this species is believed to formerly inhabit these streams.

Conclusion: Wildlife habitat and populations would be maintained on 70,630 acres designated wilderness. Both deer and bighorn sheep populations would be reduced due to mining and geothermal development within the nonsuitable portion of the WSA. Habitat for chukars and small mammals would also be reduced.

Impacts on Watershed

A mining operation located near Pike Creek or Indian Creek would affect the water quality of both streams, depending on the area of actual disturbance. The increased sediment load of both streams and the leaching of harmful minerals may be a direct result of this action.

The perennial streams in the High Steens WSA, currently in pristine condition, would remain that way due to inaccessibility to livestock and the absence of projected ground disturbing activities. The minor erosion problems on 8 miles of streams are presently healing due to establishment of more riparian vegetation.

In the Little Blitzen Gorge WSA, the minor erosion problems on 2 miles of Little Blitzen River are presently healing due to riparian vegetation establishment and water quality would remain good.

Conclusion: The projected mining activity would reduce water quality of either Indian Creek or Pike Creek. Other watersheds will either stay the same or improve under livestock management.

Impacts on Livestock Grazing

Based on preliminary studies, a reduction in livestock grazing use of 206 AUMs is projected depending upon the results of monitoring, and this reduction would result in a total livestock grazing use of 4,702 AUMs in the High Steens WSA. In the absence of new range improvement projects designed to increase available forage, the reduction would be necessary to offset a shortage of available forage in the Andrews allotment portion of this WSA. Livestock grazing use in the other five allotments in this WSA of 4,269 AUMs would remain unchanged.

Livestock grazing use would remain at the current estimated level of approximately 1,248 AUMs in portions of two grazing allotments located in the Little Blitzen Gorge WSA. The seasons of use and distribution of AUMs for all allotment portions in each WSA are shown in Table 5.

One spring would be developed, with exclosures, to protect the spring source and overflow. This development is in the area designated nonsuitable for wilderness.

Vehicle use for checking livestock and range management would be precluded on 20.5 miles of ways and 9 miles of roads with some increase in operator cost and some inconvenience. Maintenance of 3 miles of fence would be done on foot or by horseback and pack animals. Mechanized heavy equipment would be used on the average of once every 10 years to maintain one spring and three reservoirs.

Vehicle use for livestock management would continue on 10 miles of ways and 13 miles of dead-end roads in the nonsuitable portion of the High Steens WSA, amounting to 10 trips per year.

Conclusion: Livestock grazing use would be reduced by 206 AUMs to 4,702 AUMs in the High Steens WSA and remain at 1,248 AUMs in the Little Blitzen Gorge WSA. Vehicle use on 20.5 miles of ways and 9 miles of roads would be precluded, with some inconvenience and a slight additional expense to livestock operators.

Impacts on Recreation Use

Motorized vehicle use would be precluded on 70,630 acres, including 7 miles of the Steens Mountain Loop Road, 2 miles of dead-end roads and 20.5 miles of ways. This closure would eliminate all motorized vehicle use in the area, mainly affecting big game hunting opportunities.

Some of the reduction in visitor days from vehicle-oriented hunting could be offset by increased use from hunters who do not rely on vehicles for transportation within their hunting areas. Fishing use within the WSA would remain nearly the same because most anglers walk to their destination. Projected use patterns indicate that the current level of 26,000 visitor days per year would decrease over time to 21,000 visitor days per year. This reduction would occur in the suitable area. In the area recommended nonsuitable, recreation use is expected to remain the same.

The quality of primitive recreation activities is expected to improve with the elimination of motorized vehicles within the WSAs. Existing use of the area for primitive recreation amounts to approximately 6,000 visitor days per year. An expected increase in primitive recreation use, amounting to less than 800 visitor days per year, would not be sufficient to offset the reduction in vehicle-oriented recreation.

Conclusion: Recreation use would decrease from the current level of 26,000 visitor days per year to approximately 21,000 visitor days per year. In the area recommended nonsuitable, recreation use is expected to remain the same.

Impacts on Local Personal Income

Livestock grazing would decrease by 206 AUMs. Projected energy and mineral development would amount to one 10-MW geothermal powerplant and one metallic mine. Overall recreation use would decrease by 5,000 visitor days per year.

Table 7 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $62,472 per year, plus an unknown level of increase attributable to the projected energy and mineral development.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $62,000.

Partial Wilderness

High Steens WSA:

Recommended suitable for wilderness: 37,930 acres (assuming acquisition of 2,000 acres of private and State land)
Recommended nonsuitable for wilderness: 33,810 acres

Little Blitzen Gorge WSA:

Recommended suitable for wilderness: 6,530 acres (assuming acquisition of a 100-acre parcel of private land)
Recommended nonsuitable for wilderness: 2,970 acres

Combined totals for both WSAs:

Recommended suitable for wilderness: 44,460 acres
Recommended nonsuitable for wilderness: 36,780 acres.

Impacts on Wilderness Values

The partial wilderness alternative would add 44,460 acres to the NWPS, assuming acquisition of 2,100 acres of private and State land and 1,150 acres of mineral estate of split-estate land. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved in areas designated wilderness. Special features, including varied geology, outstanding scenic values, a high concentration of plant species of special interest and various wildlife features, including Whitehorse cutthroat and redband trout habitat and pika and northern water shrew habitat, as well as historical and cultural values, would be protected.

Wilderness values of the 36,780 acres recommended nonsuitable, including those associated with the special features in this part of the study areas (consisting of scenic values, geologic values and wildlife values) would not be protected by wilderness designation and would be subject to disturbance from development of other resources.

Under this alternative, 1 mile of road and 8.5 miles of ways would be closed to motorized vehicle use. The remaining 14 miles of roads and 22 miles of ways would remain open.

Naturalness

The naturalness of the area's deeply-carved glacial canyons, rugged east face escarpment and the immense scenic values associated with these features, as well as the geologic, vegetative and wildlife features would be slightly enhanced by the closure of 1 mile of road and 8.5 miles of ways. This closure would allow the road and ways to return to a sagebrush and grass landscape.

Reservoir maintenance would require heavy equipment access on the 8.5 miles of ways approximately once every 10 years for one spring and one existing reservoir located within the portion of the WSA recommended suitable. This infrequent amount of use would not prevent the ways from revegetating.

In the portion of both WSAs recommended nonsuitable, continued vehicle use on the 14 miles of roads and 22 miles of ways would maintain the impact of vehicle tracks on naturalness on approximately 5,400 acres of the WSA. The projected energy and mineral exploration and development, including development of one open-pit mine and one 10-megawatt power plant, would result in approximately 310 acres of surface disturbance, which would visually influence naturalness on approximately 7,100 acres in the High Steens WSA. The projected development of one spring would cause 1 acre of surface disturbance and visually influence naturalness on approximately 25 acres.

Solitude

Opportunities for solitude provided by the east face escarpment and its drainages, the diverse topography of the remainder of the two WSAs and the varied vegetative screening would slightly improve with the closure of 8.5 miles of existing ways and 1 mile of road and a reduction in vehicle-oriented use. Vehicles would be limited to roads and ways in the portion of the WSAs recommended nonsuitable, thus providing a core area for people to hike into and experience solitude with no disturbance from vehicles.

Maintenance of one spring and one existing reservoir would require the use of heavy equipment approximately once every 10 years for this one facility. This maintenance activity would cause minor local impairment of solitude.

In the area recommended nonsuitable, continued vehicle use on 14 miles of roads and 22 miles of ways, and human activity associated with vehicle use and the projected range improvement, would cause repeated, but short-term impairment of solitude opportunities adjacent to these activities. Solitude opportunities would be affected by activities in the vicinity of the projected energy and mineral developments, which would influence a total of approximately 7,100 acres.

Primitive and Unconfined Recreation

Closure of 8.5 miles of existing ways and 1 mile of road to motorized vehicle use would increase opportunities for participating in primitive and unconfined recreation activities such as hiking, sightseeing, hunting, photography, wildlife viewing, camping, backpacking and horseback riding. The quality of these activities would improve with the elimination of motorized vehicle use and the revegetation of the ways and road. A more natural, primitive and wild setting would be provided in the area recommended suitable.

In the area recommended nonsuitable, the opportunities to participate in primitive and unconfined recreation activities would be reduced by the development of the projected range improvement, projected energy and mineral development and continued vehicle use of the 14 miles of roads and 22 miles of ways. Such use would continue to intrude upon primitive, nonmotorized recreation opportunities in the vicinity of the roads and ways, as well as the projected developments.

Special Features

Eliminating motorized vehicle use on the 8.5 miles of existing ways and 1 mile of road would reduce the influences on the areas' special features. These influences include vehicle use impairing scenic vistas and causing minor seasonal disturbance to wildlife that inhabit these study areas. The ways traverse areas with population of wildlife and also cross areas of scenic quality, resulting in a visual contrast not in harmony with the natural setting.

Any special features associated with the area recommended nonsuitable, including deer and bighorn sheep winter range would be subject to disturbance and impacts from development of other resources, including a projected geothermal plant and a 150-acre open-pit mine. Monitoring and mitigation measures would reduce or eliminate possible impacts. Continued vehicle use of the 14 miles of roads and 22 miles of ways that would remain open would maintain the impact on scenic vistas, as well as the minor seasonal disturbance to wildlife that inhabit this portion of the study areas.

Conclusion: Wilderness designation of 44,460 acres of the High Steens WSA and Little Blitzen Gorge WSA would result in protection and enhancement of the existing wilderness values in the two WSAs. The 36,780 acres recommended nonsuitable would be subject to projected energy, mineral and range developments and improved access that would both directly and indirectly affect wilderness values on approximately 7,200 acres, with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

Under the partial wilderness alternative, 36,026 acres of public land, plus an additional 2,100 acres of private land and 1,150 acres of mineral estate proposed for acquisition, would be closed to mineral entry. In this alternative, approximately 5,184 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 of Interrelationships.

Energy Development

Energy exploration and development would be precluded on 39,276 acres, assuming acquisition of the 2,100 acres of private lands and 1,150 acres of mineral estate of split-estate lands.

The suitable portion of the WSAs contains no acres with a high potential for the occurrence of geothermal resources. The nonsuitable portion of the High Steens WSA contains 6,106 acres of land with a high potential for the occurrence of geothermal resources. There is abundant direct and indirect evidence to support this rating.

Within the nonsuitable portion of the High Steens WSA, projected development of one 10-megawatt geothermal power plant would occur.

Conclusion: One projected 10-megawatt geothermal power source would be developed in the High Steens WSA outside the suitable wilderness recommendation.

Mineral Development

Under the partial wilderness alternative, 39,276 acres would be closed to mineral entry, assuming acquisition of private, State and mineral estate land.

In most of this area, there is abundant direct and indirect evidence indicating a high potential for the occurrence of copper, gold, mercury, molybdenum and silver.

The suitable area contains seven mining claims, all within the High Steens WSA.Since there is a lack of activity on the claims and numerous claims have been dropped, no exploration or development of the existing claims is projected under this alternative.

There is also a known deposit of an industrial mineral, perlite, with an inferred reserve of 400,000 tons on the east escarpment of Steens Mountain near the Little Alvord Creek. However, no exploration or development of this resource is projected.

The lands recommended nonsuitable would be open to mineral entry. Projected exploration would occur at 10 locations. Given the known past and currently active copper and molybdenum deposits in the world, this exploration is not expected to locate deposits of copper or molybdenum that would be economically competitive and subject to development.

Exploration is anticipated to prove the existence of an economical ore body for silver, gold and mercury within the eastern boundary area of the High Steens WSA north of Alvord Hot Springs, gold, silver and mercury would be mined within one projected 150-acre open-pit mine.

Conclusion: Projected development of one 150-acre open-pit mine for gold, silver and mercury production would occur in the High Steens WSA outside the suitable wilderness recommendation area.

Impacts on Vegetation

Wilderness designation would not introduce any significant new conditions or influences to the suitable portion of the WSAs as a whole. The vegetative composition, therefore, as described in the vegetative section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid- to late seral stage overall.

The 8.5 miles of existing ways and 1 mile of road, once closed to vehicle use, would naturally revegetate with annual forbs and grasses within approximately two growing seasons. Sagebrush would become established in these ways within five years.

The 6,530 acres designated wilderness would not be subject to surface disturbing activities. Vegetation dependent upon the existing, undeveloped environment would thus be maintained.

In the area recommended nonsuitable, the 22 miles of ways and 14 miles of roads would not revegetate due to continued use by vehicles. The projected energy and mineral development activities would directly disturb 310 acres and corresponding vegetative cover. Construction of one spring development would disturb 1 acre of surface area and corresponding vegetative cover. This development would enhance watershed resources by protecting the source and overflow, allowing overall vegetation recovery within the WSAs.

Conclusion: Overall vegetative composition would not substantially change. Proposed road and way closures would result in them revegetating naturally. Projected energy and mineral development would directly disturb vegetative cover on 310 acres.

Impacts on Wildlife

Wildlife habitat for a summer population of 2,500 deer, 50 elk, 150 antelope and 400 bighorn sheep, and a winter population of 1,000 deer, 30 antelope and 400 bighorn sheep would be maintained under wilderness designation. Adequate forage and cover would be ensured in livestock allotment management plans to meet ODFW management objectives for trout, big game and nongame species. On public land, about 65 percent of the deer summer range, 40 percent of the deer winter range, none of the antelope winter range, 65 percent of the riparian habitat and 60 percent of the trout habitat would be in the area recommended suitable for wilderness. Table 6 shows the fish and riparian habitat in the area.

ODFW's trapping of bighorn sheep for relocation to sites in eastern Oregon , including other WSAs, would be allowed to continue. This is an exceptional situation in which motorized equipment may be used for wilderness enhancing purposes where no other alternatives exist. It is the minimum necessary use, and it will not degrade the area's wilderness character. ODFW and BLM fishery studies in the WSAs would be precluded due to the need for helicopter access and this data would not be available for fishery management.

Acquisition of 2,100 acres of private and State land would add wilderness protection deer, elk, antelope and bighorn sheep summer range and deer, antelope and bighorn sheep winter range. Riparian habitat occurs along 9.6 miles of stream located on this private property. Redband trout are present in 2.3 miles of Kiger Creek and hybrid Lahontan cutthroat trout are present in 2.5 miles of Wildhorse Creek on private property. Closure of 1 mile of road and 8.5 miles of ways would have slight impacts on wildlife, due to the light vehicle use that occurs. Roads used for sage grouse brood counts would remain open.

Half of the fishery improvements proposed for Cottonwood Creek would be in the area recommended as nonsuitable and pools would be blasted in the rocky streambottom at 12 locations, improving habitat for

Whitehorse cutthroat trout. Half of the proposed fisheries improvements would be in the area recommended as suitable and they would not be allowed because the project is not necessary for the continued existence or welfare of fish in a wilderness area and the purpose is not to restore deteriorated habitat. Efforts to reintroduce Whitehorse cutthroat trout into parts of Big Alvord Creek and Willow Creek would be allowed. The area proposed for reintroduction of these fish would be located in the portion of the WSA recommended as nonsuitable.

The projected mine and geothermal development in the nonsuitable area may affect achievement of ODFW's objectives for wintering bighorn sheep and deer. Habitat destruction and influences from heavy equipment and other disturbances in the southeastern portion of the WSA would affect these animals. Bighorns are not usually tolerant of human disturbance and disturbance to bighorns and deer would stress both species and cause them to leave the area, to possibly inferior habitat. ODFW estimates a 3 percent reduction in deer numbers in the WSA (30 deer) and a 5 percent reduction in present bighorn numbers (12 bighorns) due to the projected mine. Similarly, ODFW estimates a 2 percent reduction in deer numbers in the WSA (20 deer) and a 5 percent reduction in bighorn numbers (12 bighorns) due to the projected geothermal plant.

Habitat for chukars and small mammals would be slightly reduced by mineral development. Chukars would move to other habitat. Small mammals would have their habitat destroyed over a small area, with a proportional loss of individuals.

Conclusion: Wildlife habitat and populations would be maintained on 44,460 acres designated wilderness. Both deer and bighorn sheep populations would be reduced due to mining and geothermal development within the nonsuitable portion of the WSA. Habitat for chukars and small mammals would also be reduced.

Impacts on Watershed

In the High Steens WSA, a projected mining operation would effect either Pike Creek or Indian Creek, depending on actual mine location, because of the resulting sediment accumulation and mineral leaching possibilities.

The other perennial streams currently in pristine condition would remain that way due to inaccessibility to livestock and the absence of ground disturbing activities. The minor erosion problems on 8 miles of stream are presently healing due to establishment of riparian vegetation. Water quality would remain good on those streams not affected by mining.

In the Little Blitzen Gorge WSA, the minor erosion problems, on 2 miles of stream, are presently healing due to riparian vegetation establishment. Watersheds in pristine condition would remain that way due to their remoteness.

Conclusion: The projected mining activity would reduce water quality on either Pike Creek or Indian Creek. Other watersheds would either remain the same or improve under livestock management.

Impacts on Livestock Grazing

Based on preliminary studies, a reduction in livestock grazing use of 206 AUMs is projected, depending upon the results of monitoring, and this reduction would result in a total livestock grazing use of 4,702 AUMs in the High Steens WSA. In the absence of new range improvement projects designed to increase available forage, the reduction would be necessary to offset a shortage of available forage in the portion of the Andrews allotment located in this WSA. Livestock grazing use in the portion of the other five allotments located in this WSA would remain at 4,369 AUMs.

Livestock grazing use would remain at the current estimated use level of approximately 1,248 AUMs in the portions of the two grazing allotments located in the Little Blitzen Gorge WSA. The seasons of use and distribution of AUMs for all allotment portions located in both WSAs are as shown in Table 5.

Vehicle use for checking livestock and overall range management, would be precluded on 8.5 miles of ways and 1 mile of road, with a slight increase in operator costs and some inconvenience. Maintenance of the existing 3 miles of fence would be done on foot or by horseback and pack animals. Mechanized heavy equipment would be used on the average of once every 10 years to maintain the one existing reservoir and one developed spring.

In the nonsuitable area, one spring would be developed, with exclosures to protect the spring source and overflow.

Vehicle use for livestock management would continue on 22 miles of ways and 14 miles of road in the nonsuitable area, amounting to approximately 10 trips per year.

Conclusion: Livestock grazing use would be reduced by 206 AUMs to 4,702 AUMs in the High Steens WSA and would remain at 1,248 AUMs in the Little Blitzen Gorge WSA. Vehicle use on 8.5 miles of ways and 1 mile of road would be precluded, with some increased cost and inconvenience to livestock operators.

Impacts on Recreation Use

Under the partial alternative, opportunities for and the quality of primitive recreation activities would be maintained or improved in the area recommended as suitable for wilderness. Since the entire Steens Loop Road would remain open, there would be no effects to vehicle-oriented recreation associated with sightseeing along the road. Quality of primitive recreation would continue to be influenced within the WSAs along the Steens Loop Road due to motor vehicle use.

Motorized vehicle use would be precluded on 44,460 acres, involving 8.5 miles of ways and 1 mile of road. This would eliminate vehicle-oriented recreation for this vicinity. There would be no great disbursement of vehicle-oriented use to other areas, because these recreationists would have a large area adjacent to the suitable area in which to utilize existing roads and ways.

Primitive recreation is expected to slightly increase. However, this increase would not be sufficient to offset the reduction of motorized vehicles. Current recreational use is estimated to be 26,000 visitor days per year for the entirety of both WSAs, with 6,000 visitor days attributed to primitive recreation activities. Recreation use is expected to decrease over time to approximately 24,000 visitor days per year.

Conclusion: Recreation use would decrease from the current level of 26,000 visitor days per year to approximately 24,000 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would decrease by 206 AUMs. Projected energy and mineral development would amount to one 10-MW geothermal powerplant and one metallic mine. Overall recreation use would decrease by 2,000 visitor days per year.

Table 7 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $26,472 per year, plus an unknown level of increase attributable to the projected energy and mineral development.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $26,000.

Proposed Action

High Steens WSA:

Recommended suitable for wilderness: 33,343 acres (assuming acquisition of 1,368 acres of private and State land)
Recommended nonsuitable for wilderness: 37,765 acres

Little Blitzen Gorge WSA:

Recommended suitable for wilderness: 4,700 acres (assuming acquisition of a 100-acre parcel of private land)
Recommended nonsuitable for wilderness designation: 4,800 acres

Combined totals for both WSAs:

Recommended suitable for wilderness: 38,043 acres
Recommended nonsuitable for wilderness: 42,565 acres

Impacts on Wilderness Values

The proposed action alternative would add 38,043 acres to the NWPS, assuming acquisition of 1,468 acres of private and State land and 60 acres of mineral estate of split-estate land. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved in areas designated wilderness. Special features, including varied geology, outstanding scenic values, a high concentration of plant species of special interest and various wildlife features, including bighorn sheep habitat, Whitehorse cutthroat and redband trout habitat and pika and northern water shrew habitat, as well as historical and cultural values, would be protected.

Wilderness values of the 42,565 acres recommended nonsuitable, including those associated with the special features in this part of the study areas (consisting of scenic values, geologic values and wildlife values) would not be protected by wilderness designation and could be subject to disturbance from development of other resources, including projected energy and mineral development.

Under this alternative, 1.75 miles of ways would be closed to motorized vehicle use. The remaining 15 miles of roads and 28.75 miles of ways would remain open.

Naturalness

The naturalness of the areas' deeply-carved glacial canyons, rugged east face escarpment and the immense scenic values associated with these features, as well as the geologic, vegetative and wildlife features would be slightly enhanced by the closure of 1.75 miles of ways. This closure would allow the road and ways to return to a sagebrush and grass landscape.

In the portion of the WSA recommended nonsuitable, continued vehicle use on the 15 miles of dead-end roads and 28.75 miles of ways would maintain the impact of vehicle tracks on naturalness on approximately 4,042 acres of the WSA. The projected energy and mineral exploration and development, including development of one open-pit mine and one 10-megawatt geothermal power plant, would result in approximately 310 acres of surface disturbance, which would visually influence naturalness on approximately 7,100 acres in the High Steens WSA. Projected development of one spring in the nonsuitable area would cause 1 acre of surface disturbance and would visually influence naturalness on approximately 25 acres.

Solitude

Opportunities for solitude provided by the east face escarpment and its drainages, the diverse topography of the remainder of the two WSAs and the varied vegetative screening would slightly improve with the closure of 1.75 miles of existing ways and a reduction in vehicle-oriented use. Vehicles would be limited to roads and ways in the portion of the WSAs recommended nonsuitable, thus providing a core area for people to hike into and experience solitude with no disturbance from vehicles.

In the area recommended nonsuitable, continued vehicle use on 15 miles of dead-end roads and 28.75 miles of ways, and human activity associated with vehicle use would cause repeated, but short-term impairment of solitude opportunities adjacent to these activities. The projected range improvement, consisting of one spring development, would cause a short-term impairment of solitude during the construction phase. Solitude opportunities would be impacted in the vicinity of projected energy and mineral development activities, which would directly affect 310 acres. Solitude opportunities in the rest of the area would remain unchanged.

Primitive and Unconfined Recreation

Closure of 1.75 miles of existing ways and 1 mile of road to motorized vehicle use would increase opportunities for participating in primitive and unconfined recreation activities such as hiking, sightseeing, hunting, photography, wildlife viewing, camping, backpacking and horseback riding. The quality of these activities would improve with the elimination of motorized vehicle use and the revegetation of the ways and road. A more natural, primitive and wild setting would be provided in the area recommended suitable.

In the area recommended nonsuitable, the opportunities to participate in primitive and unconfined recreation activities would be reduced by the development of the projected range improvement, projected energy and mineral developments and continued vehicle use of the 15 miles of dead-end roads and 28.75 miles of ways. Such use would continue to intruded upon primitive, nonmotorized recreation opportunities in the vicinity of the roads and ways, as well as the projected development.

Special Features

Eliminating motorized vehicle use on the 1.75 miles of existing ways would reduce influences on special features. These influences include vehicle use impairing scenic vistas and causing minor seasonal disturbance to wildlife that inhabit these study areas. The ways traverse areas with populations of wildlife and also cross areas of scenic quality, resulting in a visual contrast not in harmony with the natural setting.

Special features associated with the area recommended nonsuitable would be subject to disturbance from projected development of energy and mineral resources and the range project. Monitoring and mitigation measures would reduce or eliminate possible impacts. Continued vehicle use of the 15 miles of dead-end roads and 28.75 miles of ways that would remain open would maintain the impact on scenic vistas, as well as the minor seasonal disturbance to wildlife that inhabit this portion of the study areas.

Conclusion: Wilderness designation of 38,043 acres would result in protection and enhancement of the more outstanding wilderness values of the two WSAs. The 42,525 acres recommended nonsuitable would be subject to projected resource activities that would both directly and indirectly impair wilderness values over approximately 7,100 acres, with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

Under the proposed action, 33,563 acres assuming acquisition of 1,468 acres of private land and 60 acres of mineral estate proposed for acquisition, would be closed to mineral entry. In this alternative, approximately 4,480 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships.

Energy Development

Energy exploration and development would be precluded on 33,563 acres.

All of the 6,106 acres of high potential for geothermal resources located in the High Steens WSA are in the nonsuitable area. There is abundant direct and indirect evidence to support this rating. Projected exploration would occur.

Within the nonsuitable portion of the High Steens WSA, projected development of one 10-megawatt geothermal power plant would occur.

Conclusion: One 10-megawatt geothermal power source would be developed in the High Steens WSA outside the suitable wilderness recommended area.

Mineral Development

Under this alternative, 33,563 acres would be closed to mineral entry.

In the majority of this area, there is abundant direct and indirect evidence indicating a high potential for the occurrence of copper, gold, mercury, molybdenum and silver.

The suitable area contains seven mining claims, all within the High Steens WSA. Since there is a lack of activity on the claims and numerous claims have been dropped, no exploration or development of the existing claims is projected under this alternative.

There is also a known deposit of an industrial mineral, perlite, with an inferred reserve of 400,000 tons on the east escarpment of Steens Mountain near the Little Alvord Creek. However, no exploration or development of this resource is projected.

The lands recommended nonsuitable would be open to mineral entry. Projected exploration would occur. Given the known past and currently active copper and molybdenum deposits in the world, this exploration is not expected to locate deposits of copper or molybdenum that would be economically competitive and subject to development.

Exploration is anticipated to prove the existence of an economical ore body for silver, gold and mercury within the eastern boundary area of the High Steens WSA north of Alvord Hot Springs, gold, silver and mercury would be mined within one 150-acre open-pit mine.

Conclusion: Projected development of one open-pit mine for gold, silver and mercury would occur outside the suitable wilderness recommendation area.

Impacts on Vegetation

Wilderness designation would not introduce any significant new conditions or influences to the suitable portions of the WSAs as a whole. The vegetative composition, therefore, as described in the Vegetation section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid- to late seral stage overall.

The 1.75 miles of existing ways once closed to vehicle use, would naturally revegetate with annual forbs and grasses within approximately two growing seasons. Sagebrush would become established in these ways within five years.

The 33,343 acres designated wilderness would not be subject to surface disturbing activities. Vegetation dependent upon the existing, undeveloped environment would thus be maintained.

In the area recommended nonsuitable, the 28.75 miles of ways and 15 miles of roads would not revegetate due to continued use by vehicles. The projected energy and mineral development, consisting of a 150-acre open-pit mine and associated processing plant and a 10-megawatt geothermal plant, would directly disturb 310 acres and corresponding vegetative cover.

The vegetation around the spring development would be temporarily disturbed. Revegetation would occur within two to three growing seasons.

Conclusion: Overall vegetative composition would not substantially change. Proposed ways and road closures would result in their revegetating naturally.

The projected energy and mineral development would directly disturb vegetative cover on 310 acres.

Impacts on Wildlife

Wildlife habitat for a summer population of 2,500 deer, 50 elk, 150 antelope and 400 bighorn sheep, and a winter population of 1,000 deer, 30 antelope and 400 bighorn sheep would be maintained under wilderness designation. Adequate forage and cover would be ensured in livestock allotment management plans to meet ODFW management objectives for trout, big game and nongame species. On public land, about 65 percent of the deer summer range, 40 percent of the deer winter range, none of the antelope winter range, 64 percent of the riparian habitat and 59 percent (24 miles) of the trout habitat would be in the area recommended suitable for wilderness. Table 6 shows the fish and riparian habitat in the area.

The projected mine and geothermal development may affect achievement of ODFW's objectives for wintering bighorn sheep and deer. Habitat destruction and influences from heavy equipment and other disturbances in the southeastern portion of the WSA would affect these animals. Bighorns are not usually tolerant of human disturbance and disturbance to bighorns and deer would stress both species and cause them to leave the area, to possibly inferior habitat. ODFW estimates a 3 percent reduction in deer numbers in the WSA (30 deer) and a 5 percent reduction in present bighorn numbers (12 bighorns) due to the projected mine. Similarly, ODFW estimates a 2 percent reduction in deer numbers in the WSA (20 deer) and a five percent reduction in bighorn numbers (12 bighorns) due to the projected geothermal plant. Habitat for chukars and small mammals would be slightly reduced by mineral development. Chukars would move to other habitat. Small mammals would have their habitat destroyed over a small area, with a proportional loss of individuals.

In the High Steens WSA, ODFW's trapping of bighorn sheep for relocation to other sites in eastern Oregon, including other WSAs, would be allowed to continue. This is an exceptional situation in which motorized equipment may be used for wilderness enhancing purposes where no other alternatives exist. It is the minimum necessary use, and it will not degrade the area's wilderness character. All ODFW and BLM fishery studies would be precluded and this data would not be available for fishery management.

Acquisition of 1,468 acres of private and State land would contain deer, elk, antelope and bighorn sheep summer range and deer, antelope and bighorn sheep winter range. Riparian habitat occurs along 7.1 miles of stream located on this private property. Redband trout are present in 2.3 miles of Kiger Creek. Closure of 1.75 miles of ways would affect wildlife only slightly, due to the light vehicle use that occurs. Roads used for sage grouse brood counts would remain open.

Half of the fishery improvements proposed for Cottonwood Creek would be in the area recommended as nonsuitable and would be allowed and half of the improvements would be in the suitable area and would not be allowed. When completed, these proposed improvements would double fish populations in those sections of stream. Whitehorse cutthroat trout would be reintroduced into Big Alvord Creek and Willow Creek.

Conclusion: Wildlife habitat and populations would be maintained on 33,343 acres in the High Steens WSA and 4,600 acres in the Little Blitzen Gorge WSA. Both deer and bighorn sheep populations would be reduced due to mining and geothermal development within the nonsuitable portion of the WSA. Habitat for chukars and small mammals would also be reduced.

Impacts on Watershed

A projected mining operation, in the nonsuitable portion of the WSA, would affect the water quality of either Pike Creek or Indian Creek depending on the location of the mining activity. The mining operation could cause increased sediment and mineral leaching problems in one or both perennial watersheds.

Other watersheds, currently in pristine condition, would remain that way due to inaccessibility to livestock and the absence of ground-disturbing activities. The small erosion problems on 8 miles of stream are presently healing due to establishment of riparian vegetation. Water quality will remain good on those streams not affected by mining.

In the Little Blitzen Gorge WSA, the minor erosion problems on 2 miles of stream are healing due to riparian vegetation establishment.

Conclusion: The projected mining activity would reduce the water quality on either Indian Creek or Pike Creek. Other watersheds would either stay the same or improve under livestock management.

Impacts on Livestock Grazing

Based on preliminary studies, a reduction in livestock grazing use of 206 AUMs is projected, depending upon the results of monitoring, and this reduction would result in a total livestock grazing use of 4,702 AUMs in the High Steens WSA. In the absence of new range improvement projects designed to increase available forage, the reduction would be necessary to offset a shortage of available forage in the portion of the Andrews allotment located in this WSA. Livestock grazing use in the portion of the other five allotments located in this WSA would remain at 4,369 AUMs.

Livestock grazing use would remain at the current estimated use level of approximately 1,248 AUMs in the portions of the two grazing allotments located in the Little Blitzen Gorge WSA. The seasons of use and distribution of AUMs for all allotment portions located in both WSAs are as shown in Table 5.

Vehicle use for checking livestock and range management would be precluded on 1.75 miles of ways, with slight cost increases and inconvenience to operators. Maintenance of the existing 3 miles of fence would be done on foot or by horseback and pack animals.

In the nonsuitable area, one spring would be developed, with exclosures to protect the source and overflow. Also, vehicle use for livestock management would continue on 28.75 miles of ways and 15 miles of roads, amounting to approximately 10 trips per year.

Conclusion: Livestock grazing use would be reduced by 206 AUMs to 4,702 AUMs in the High Steens WSA and would remain at 1,248 AUMs in the Little Blitzen Gorge WSA. Vehicle use on 1.75 miles of ways would be precluded, with a slight increased cost and inconvenience to livestock operators.

Impacts on Recreation Use

Opportunities for and the quality of primitive recreation activities would be maintained or improved for the area recommended as suitable for wilderness. Since the entire Steens Loop Road would remain open, there would be no effects to vehicle-oriented recreation associated with sightseeing along the road. Quality of primitive recreation would continue to be affected within the WSAs along the Steens Loop Road due to motor vehicle use.

Motorized vehicle use would be precluded on 38,043 acres, involving 1.75 miles of ways. Vehicle-oriented recreation would be eliminated within the area recommended suitable and would be displaced into other areas. This would improve the quality of primitive recreation activities, which would increase slightly. Some of the vehicle-oriented users would continue to use the areas, traveling by foot or by horseback. Primitive recreation is expected to increase slightly, but it would not be sufficient to offset the reduction in vehicle-oriented recreation. Existing use of the area for primitive recreation amounts to approximately 6,000 visitor days per year. The majority of the primitive recreation use occurs in the major canyons which occur in the suitable area. Projected use patterns indicate that the WSAs current level of 26,000 visitor days per year would decrease over time to 24,000 visitor days per year.

In the nonsuitable portion, vehicle use would continue on 28.75 miles of ways and 15 miles of dead-end roads.

Conclusion: Recreation use would decrease from the current level of 26,000 visitor days per year to approximately 24,000 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would decrease by 206 AUMs. Projected energy and mineral development would amount to one 10-MW geothermal powerplant and one metallic mine. Overall recreation use would decrease by 2,000 visitor days per year.

Table 7 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $26,472 per year, plus an unknown level of increase attributable to the projected energy and mineral development.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $26,000.

No Wilderness/No Action

Recommended suitable for wilderness: 0 acres
Recommended nonsuitable for wilderness: 79,140 acres

Impacts on Wilderness Values

Under the no wilderness alternative, the entire 79,140 acres would not be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation and the area's special features (including varied geology, outstanding scenic values, a high concentration of plant species of special interest), several wildlife features (including bighorn sheep habitat, Whitehorse cutthroat and redband trout habitat, pika and northern water shrew habitat) as well as historical and cultural values would be subject to the effects of projected management actions, including one spring development, energy and mineral exploration and development and a stream habitat improvement project.

Naturalness

Continued vehicle use of the 30.5 miles of existing ways and 15 miles of dead-end roads would maintain the impacts of vehicle tracks and usage on naturalness, affecting approximately 6,000 acres of both WSAs.

The projected range development, consisting of one spring development, would result in one acre of surface disturbance which would visually influence naturalness on approximately 25 acres. The projected energy and mineral exploration and development, including development of one open-pit mine and one 10-megawatt geothermal power plant, would result in approximately 310 acres of surface disturbance which would visually influence naturalness on approximately 7,100 acres of both WSAs.

Solitude

Continued vehicle use of 30.5 miles of existing ways and 15 miles of dead-end roads, and human and mechanical activity associated with vehicle use, would cause repeated, but short-term local impairment of solitude opportunities adjacent to these activities. The continually increasing use of vehicles for recreational pursuits would impair solitude opportunities in the vicinity of the roads and ways. Solitude opportunities would be affected in the vicinity of projected mining activities. Solitude opportunities in the remainder of both WSAs would remain unchanged.

Primitive and Unconfined Recreation

Under this alternative, opportunities for participating in primitive recreation activities would be reduced by the projected range development, projected energy and mineral development, and the continual use of vehicles for recreational pursuits.

The 30.5 miles of ways and 15 miles of dead-end roads would remain open, allowing for the continued and increasing use of these roads and ways by vehicles, which would limit and impair the ability to experience primitive recreation activities. The livestock development, the wildlife habitat improvement project, projected energy and mineral exploration and development, vehicle use for grazing management, as well as the continued and increasing vehicle-oriented recreation on the roads and ways, would reduce opportunities for primitive and unconfined recreation on approximately 13,000 acres.

Special Features

The areas' special features (including outstanding scenic values, varied geological features, a high concentration of plant species of special interest), several wildlife features (including bighorn sheep habitat, Whitehorse cutthroat and redband trout habitat, pika and northern shrew habitat), as well as historical and cultural values, would be subject to disturbance from development of other resources. These projected developments include a 150-acre open pit mine and accompanying processing plant, a 10-megawatt geothermal plant, a stream habitat improvement project and one spring development. As some of these projects are expected to occur in the vicinity of the special features, impacts could occur. However, monitoring and mitigation are expected to minimize the effects of the projected actions.

Conclusion: In the absence of wilderness designation, projected management actions would directly and indirectly impair wilderness values over approximately 13,000 acres of both WSAs, with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

The entire area would be open to mineral entry with the exception of approximately 4,480 acres withdrawn from mineral location and leasing by the Congressional designation of the Donner und Blitzen River as a Wild and Scenic River.

Energy Development

Geothermal resources have a high potential for occurrence on 6,106 acres of the High Steens WSA. The Little Blitzen Gorge WSA contains no high potential areas. Within the High Steens WSA there is abundant direct and indirect evidence for this geothermal resource which lies within the southeastern and eastern part of the WSA. Most of this area also lies within the Alvord KGRA. The High Steens WSA also contains three geothermal leases. Projected exploration for geothermal resources would occur. Within the High Steens WSA, projected development of one 10-megawatt geothermal power plant would occur.

Conclusion: One projected 10-megawatt geothermal power source would be developed.

Mineral Development

Most of both WSAs has a high mineral potential rating along with abundant direct and indirect evidence for the occurrence of copper, gold, mercury, molybdenum and silver. There is also a known deposit of an industrial mineral, perlite, with an inferred reserve of 400,000 tons on the east escarpment of Steens Mountain near the Little Alvord Creek. However, no exploration or development of this resource is projected.

Projected exploration of copper and molybdenum would occur. Given the known past and currently active copper and molybdenum deposits in the world, this exploration is not expected to locate deposits of copper or molybdenum that would be economically competitive and subject to development.

Exploration is anticipated to prove the existence of an economical ore body for silver, gold and mercury. These minerals would be mined within one projected 150-acre open-pit mine.

Conclusion: Projected development of one open-pit mine for gold, silver and mercury would occur.

Impacts on Vegetation

The 30.5 miles of existing ways and 15 miles of road would remain open to vehicle use, and would not naturally revegetate due to continued use by vehicles.

The projected range improvement for this area, one spring development, would temporarily disturb vegetative cover on 1 acre. This development would enhance riparian vegetation by excluding livestock from the spring area.

The projected energy and mineral development, consisting of a 150-acre open pit mine and a 10-megawatt geothermal plant, would directly disturb 310 acres and corresponding vegetative cover.

Conclusion: The 15 miles of dead-end roads and 30.5 miles of ways would not revegetate. The projected energy and mineral developments and one range project would directly disturb 310 acres of vegetation. Vegetation on the remainder of both WSAs would remain unchanged.

Impacts on Wildlife

In the High Steens WSA, ODFW's management objectives for sage grouse, redband trout, Whitehorse cutthroat trout and hybrid Lahonton cutthroat-rainbow trout could be met under the no wilderness alternative. Table 6 shows the fish and riparian habitat in this area.

Wildlife habitat for a summer population of 2,500 deer, 50 elk, 150 antelope and 400 bighorn sheep would be provided. Seasonal habitats of these species would be maintained adequately to provide for these numbers. The projected mine and geothermal development may affect achievement of ODFW's objective for 400 wintering bighorn sheep and 1,000 wintering deer. Habitat destruction and influences from heavy equipment and other disturbances in the southeastern portion of the WSA would affect these animals. Bighorns are not usually tolerant of human disturbance and disturbance to bighorns and deer would stress both species and cause them to leave the area, to possibly inferior habitat. ODFW estimates a three percent reduction in deer numbers in the WSA (30 deer) and a five percent reduction in present bighorn numbers (12 bighorns) due to the projected mine. Similarly, ODFW estimates a two percent reduction in deer numbers in the WSA (20 deer) and a five percent reduction in bighorn numbers (12 bighorns) due to the projected geothermal plant. Habitat for chukars and small mammals would be slightly reduced by mineral development. Chukars would move to other habitat. Small mammals would have their habitat destroyed over a small area, with a proportional loss of individuals.

In the High Steens WSA, fishery improvements proposed for Cottonwood Creek would be completed, improving trout habitat and increasing trout populations. Efforts to reintroduce Whitehorse cutthroat trout into parts of Big Alvord Creek and Willow Creek would occur. Aerial stocking of Wildhorse Lake would continue, perpetuating this Lahonton cutthroat trout fishery.

ODFW's trapping of bighorn sheep would continue on the east side of Steens Mountain providing a bighorn sheep source for relocations in eastern Oregon.

ODFW's management objectives for the Little Blitzen Gorge WSA could all be met. Habitat for all species would be maintained, as no major habitat disturbing activities are projected.

All fish and wildlife studies using helicopters and vehicles would continue in both WSAs, as well as aerial stocking of fish, allowing for additional data to be used in fishery management.

Conclusion: Bighorn sheep and deer populations would be reduced due to mining and geothermal development. Habitat for chukars and small mammals would also be reduced with a proportional loss of individuals. Trout populations would increase.

Impacts on Watershed

In the High Steens WSA, the establishment of a mining operation on either Pike Creek or Indian Creek would affect water quality due to the increased sediment load and the possibility of mineral leaching.

Other perennial streams, watersheds currently in pristine condition and without potential ground disturbing activities, would remain in that condition. Erosion problems on 8 miles of perennial streams would heal over time with riparian vegetation establishment. Water quality would remain good on streams without mining activity.

In the Little Blitzen Gorge WSA, the minor erosion problems on 2 miles of stream are healing due to riparian vegetation establishment.

Conclusion: The projected mining activity would create poor water quality on two perennial streams. Other watersheds would either stay the same or improve under livestock management.

Impacts on Livestock Grazing

Livestock grazing use in the High Steens WSA would remain unchanged at the current estimated use level of 4,908 AUMs.

Livestock grazing use would remain at the current estimated level of approximately 1,248 AUMs in portions of two grazing allotments located in the Little Blitzen Gorge WSA.

One spring development would be constructed under this alternative to protect the source and overflow from livestock damage. The new spring development would exclude livestock from the water source and would provide clean drinking water for animals at water troughs located away from the spring sources and drainages.

Vehicle use for livestock management and facility inspection and maintenance would continue on the 30.5 miles of ways and 15 miles of roads.

Conclusion: Livestock grazing use would remain at 6,156 AUMs.

Impacts on Recreation Use

Under the no wilderness/no action alternative, vehicle access within the Little Blitzen Gorge WSA would continue to be limited to existing roads and ways. An off-highway vehicle designation associated with Steens Mountain Recreation Lands would continue the closure of 7.5 miles of ways and prohibition of cross-country travel, so primitive recreation would remain dominant within much of the area. These activities would remain subject to disturbance in areas adjacent to the Loop Road. In the High Steens WSA, primitive recreation activities are subordinate to vehicle-oriented recreation, particularly that associated with the Steens Loop Road. Primitive recreation activities would be disturbed by this existing use and by vehicle use on other roads and ways throughout the WSA.

Vehicle-oriented recreation use would continue to be closed on the 7.5 miles of ways and to cross-country travel due to the current off-highway vehicle designation associated with the Steens Mountain Recreation Lands. Primitive recreation is expected to increase slightly in the roadless areas of Little Blitzen Gorge, Kiger Gorge, Big Indian Canyon, Little Indian Canyon and Wildhorse Creek Canyon due to their popularity. Projected use patterns indicate that the current level of 26,000 visitor days per year would increase over time to approximately 27,000 visitor days per year.

Conclusion: The areas' current recreation use level of 26,000 visitor days annually would increase by 1,000 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 6,156 AUMs. Projected energy and mineral development would amount to one 10-megawatt geothermal powerplant and one metallic mine. Overall recreation use would increase by 1,000 visitor days per year.

Table 7 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $12,000 per year, plus an unknown level of increase attributable to the projected energy and mineral development.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by approximately $12,000.

Unavoidable Adverse Impacts of the Proposed Action

On 38,043 acres recommended suitable for wilderness designation, some projected energy and mineral exploration would be foregone. Vehicle use would be excluded, reducing opportunities for those who prefer this type of recreation. There would be a slight increase in livestock management costs as a result of the closure of the 1.75 miles of ways.

In the area recommended nonsuitable, projected energy and mineral developments and range and wildlife projects would lead to unavoidable adverse impacts to wilderness values as a result of 310 acres of direct surface disturbance, which would visually influence approximately 7,100 acres.

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity.

Under the Proposed Action, most existing short-term uses would continue, with some added minor inconvenience and expense to the livestock operators resulting from the exclusion of vehicles on 1.75 miles of ways for day-to-day inspection activities. Vehicle-oriented recreation uses, such as hunting, would be replaced by other types of primitive recreation activities. The long-term productivity of the wilderness values in the portion of the WSA recommended for wilderness designation would be preserved.

In the portions of the WSAs recommended nonsuitable, the long-term ability of the area to produce wilderness values would be directly lost on 310 acres due to the projected range development and energy and mineral developments. This would visually influence approximately 7,100 acres. Further declines from other uses could occur over the long term.

Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, there would be no irreversible or irretrievable commitment of the wilderness resources within the portions of the WSAs recommended suitable for designation.

On 42,565 acres recommended nonsuitable, projected energy and mineral developments would result in an irreversible commitment of resources on 310+acres as well as an irretrievable commitment of the energy and mineral resources. A spring development would reduce wilderness values by an additional one acre. Overall, this would visually influence approximately 7,100 acres.

5. Wilderness Manageability and Rationale for the Proposed Action

Manageability of the Area as Wilderness

Both the High Steens WSA and Little Blitzen Gorge WSA would be manageable as wilderness under the all wilderness alternative. However, management problems could occur as a result of irregular and unidentifiable boundaries with private land, the presence of private and split-estate lands and past (and potential for future) development of mineral resources in areas where mining claimants may have valid rights.

There could be potential management problems with identification of boundaries in both study areas, but this would be especially common in the High Steens WSA. Most of the boundary for this area is irregular and follows legal subdivisions with private land. These boundaries are not easy to identify on the ground, and survey work and signing or fencing would be extremely costly. This is also true of the private and split-estate lands.

Management problems could also occur as a result of existing use of the area by vehicles. This is especially the case in the southwestern corner of the High Steens WSA where hunters have long used vehicles to gain access to this part of the WSA and adjacent lands. Existing vehicle ways in the area provide access routes on which use would be difficult to control.

The entire area of both WSAs has moderate to high potential for the occurrence of minerals. Depending on the extent of development (minerals or otherwise) and the need for access to the inholding across BLM land, maintaining the wilderness qualities of the surrounding wilderness lands could be difficult. This is especially the case for the southeastern portion of the High Steens WSA. Under wilderness management, mining operations which occur in the area, and which were found to have valid existing rights upon designation of the area as wilderness, could be expanded and could impair wilderness qualities.

The enhanced wilderness, proposed action and partial alternatives all attempt to reduce the potential management problems of the study areas. Wilderness designated under any of these alternatives would also be manageable but would not be without problems.

Under the enhanced wilderness alternative, the minor boundary adjustments would improve the location and identification of the boundary line and acquisition of inholdings would reduce or eliminate potential problems with recreation use or development. This alternative would also reduce problems with existing vehicle-oriented recreation in the southwestern portion of the area, and potential increased mineral development on the southeast, although manageability problems would still be present.

The proposed action and partial alternative also would reduce potential problems with recreation use and mineral development through acquisition of inholdings, though fewer acres would be involved. Boundary problems with private land would still exist, but would be substantially reduced as a result of the adjustments along the northern and eastern sides of the High Steens WSA.

Rationale for Selection of the Proposed Action

The Steens Loop Road remains open in its entirety under the Proposed Action. This is a change from the DEIS and reflects public comments which were overwhelmingly in favor of keeping the Loop Road open.

The proposed action recommends that a large portion of the highest mountain in southeastern Oregon be designated as wilderness. Portions of the two study areas recommended as suitable for wilderness contain the majority of this highly scenic and ecologically unique mountain. This includes high, sharp ridgelines and peaks, deep glacial-carved gorges and a steep, east-facing escarpment which rises over a mile above the Alvord Basin to the east. Also included within the suitable boundary are plant and animal species of special interest and plant communities common only to alpine areas, an unusual situation for a desert mountain. The area has a large number and variety of wilderness qualities. It is in a basically natural condition, offers outstanding opportunities for solitude and primitive types of recreation and contains a large number of unique, special wilderness features.

All of the area recommended as suitable for wilderness has been identified as having moderate to high potential for the occurrence of certain minerals. Although this is a potential conflict, designation of this part of Steens Mountain is the most appropriate use of these lands. However, no development is projected on these lands. The wilderness values of this portion of the High Steens and Little Blitzen Gorge WSA outweigh the potential mineral values which could be gained from resource development.

Portions of the two study areas were recommended as being nonsuitable for wilderness under the proposed action because of conflicts with other resource uses, because of manageability problems, and because of the need to improve the location of the boundary line. Although both of the WSAs have high to moderate mineral potential, the potential for mineral development is particularly high in the southeastern corner of the High Steens WSA, which contains a number of mining claims and past, small mining operations. Although not considered likely, there is a possibility that a valuable mineral discovery could be made on the claims before the area was designated wilderness, giving the mining claimants a right to develop their claims regardless of the effect on wilderness values. If such development were to occur, it would not be possible to preserve wilderness values in the vicinity of the mines, access roads and related facilities.

The southwestern portion of the High Steens also has potential manageability problems. Vehicle-oriented recreation is a common activity on this part of the mountain and would be difficult to control in this area due to the presence of several vehicle ways and the relatively flat terrain. This area also contains a parcel of private land, is nearly surrounded by private land on unidentifiable legal boundaries and would be difficult for visitors to get to from the bulk of the study area. All of these factors contribute to the potential management problems which override the area's limited number of wilderness characteristics.

The northwestern part of the High Steens study area has a limited number of wilderness characteristics. It would be recommended as nonsuitable for wilderness because the benefits of preserving those characteristics would be outweighed by the benefits of allowing uses, such as the use of vehicles by livestock operators and recreationists, which would conflict with wilderness preservation. Unsurveyed and unmarked boundary lines separating public and private land, as well as an inholding, would make this part of the WSA difficult to manage as wilderness.

Portions of the top of the mountain would be recommended as nonsuitable for wilderness because the benefits of leaving that area open to the use of vehicles by recreationists on dead-end roads extending off from the Steens Mountain Loop Road would outweigh the benefits of preserving that area's wilderness values.

6. Summary and Analysis of Public Comments

Following is a summary of public comments specific to the WSA concerning adequacy of the analysis in this appendix and responses to those comments. These comments were received both in writing and oral testimony at public hearings during the comment periods for the 1985 Draft EIS and the 1987 Supplement to the Draft EIS. Comments concerning the BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning statewide issues and analysis are addressed in the Statewide volume.

Comment: Inadequate socio-economic data. The Table needs to show the economic value for recreation; include hunting and trophy licenses. **Response:** The Final Wilderness Environmental Impact Statement includes new economic sections and tables that incorporate values for local personal income associated with estimated recreation use.

Comment: A map showing critical values such as winter range on the east face of Steens Mountain and other URA data is needed. **Response:** A map showing wilderness special features such as crucial deer and antelope winter ranges and bighorn sheep yearlong range has been added to this appendix (See Map 8).

Comment: The EIS fails to assess economic impacts on Frenchglen Hotel and ranching in that area. **Response:** The analysis of economic impacts considers changes in local personal income resulting from actions projected under each alternative.

Comment: Displaced hunting will damage adjacent lands. **Response:** Vehicle restrictions from wilderness designation, especially under the alternatives proposing the largest acreages for wilderness (all wilderness and wilderness emphasis), could result in increased hunting and fishing pressures on adjacent areas. These pressures could have adverse effects on certain game and fish populations in these areas. However, enforcement of current game and fish regulations would preclude significant adverse affects from these activities.

Comment: Data are inadequate because there have been no plant inventories. **Response:** Plant inventories have been conducted on the Steens Mountain including High Steens and Little Blitzen Gorge WSA lands, and the resulting inventory data have been consulted in preparing this analysis. See also Statewide Volume, Chapter 5, Consultation and Coordination, Issues not Analyzed for comments on rare, threatened or endangered plants and animals.

Comment: All WSAs in and adjacent to Steens Mountain Recreation Lands should be mapped together in one set of maps to clearly present the relationship. **Response:** The land ownership map (Map 2) shows the combination of High Steens/Little Blitzen gorge and identifies adjacent WSAs. The location map (Map 2) shows locations of the Steens WSAs in relation to each other, as does the Statewide Map in the Statewide Volume.

Comment: The impacts of not allowing commercial running schools or horse trips under wilderness designation are not analyzed. **Response:** In general, horseback riding even if commercially provided under a special permit is allowed in wilderness areas. A commercial running camp would not be permitted under the Wilderness Act, since it is not a traditional wilderness recreation activity. Such an activity could be accommodated outside of the wilderness area.

Comment: Wilderness values would be impaired because of frequent low-level military flights over the proposed wilderness area. **Response:** Currently, there is one low-level military training route (VR 1301) that directly crosses the wilderness study areas. This particular training route is estimated to operate 540 missions each year at approximately 1,500 feet above ground level. The Bureau of Land Management is currently monitoring low-level aircraft flights over existing wilderness study areas to establish a data base

The following comments recommend specific boundary modifications for the Proposed Action. The comments were considered in formulating the Proposed Action in this Final EIS. The rationale section gives the reasons for selecting this Proposed Action.

Comment: The proposed closure of South Loop Road will lead to congestion on the North Loop Road. The alternative proposing closure fails to address this. **Response:** Available visitor use data do not support this opinion. The majority of the visitors using the Steens Loop Road do not make the complete loop. Most turn around at the top of the mountain and return the way they came. It should also be noted that the current proposed action no longer includes a provision for closing the road.

Comment: This area is the top of the Steens Mountains and includes part of the steep East Slope of the Steens on the western edge of the Alvord Desert. These slopes are key bighorn sheep range down to an estimated 4,600 foot elevation. This portion of the WSA has been excluded from the Proposed Action as conflict resolution for potential mining operations. Use the 4,600 foot elevation line as a new boundary for wilderness (+2,600 acres), including the slopes from Indian Creek on the south to Little Willow Creek on the north. **Response:** Impacts of boundary locations of the Proposed Action on bighorn sheep are discussed in Section 4, Environmental Consequences - Wildlife. The elevation level chosen as the boundary line for the east face of Steens Mountain was the result of an effort to balance mineral values and concerns with wildlife values and concerns.

Comment: Consider an alternative that combines all WSAs on Steens Mountain to form a large, single wilderness area. **Response:** See Section 2, Description of Alternatives, for a discussion of alternatives considered but not analyzed. The enhanced wilderness alternative does not analyze the possible combination of the High Steens and Little Blitzen Gorge WSAs with any of the adjacent study areas. Combining the High Steens WSA with the Alvord Desert WSA on the southeast by closing the road between them would not be feasible. The boundary road shared by these two study areas is a major county road. It provides access to the southern end of Harney County along the eastern side of Steens Mountain and is well-maintained and well-traveled.

Combining the High Steens WSA with the South Fork of the Donner und Blitzen River WSA to the southwest is also not feasible. Although the road which separates the two study areas is not a well-maintained road, it does provide access to private and other lands on the western side of the mountain. This road forms a common boundary for the two WSAs for less than 1 mile, and closing it would not result in a substantial improvement in the manageability or wilderness values of either study area.

The same is true of combining the Little Blitzen Gorge WSA and the Blitzen River WSA on the west; closing a short section of road between the areas would not make a substantial difference in the manageability or wilderness values of the area.

Table 1. Summary of Proposed Management Under Each Alternative, High Steens (OR-2-85F) and Little Blitzen Gorge (OR-2-86F) WSAs

Proposed Management	All Wilderness Wilderness	Enhanced	Partial	Proposed Action	No Wilderness/ No Action
Acres Designated as Wilderness	79,140	64,370	42,360	36,575	0
Acres Closed to ORVs by [1] Wilderness Designation	79,140	64,370	42,360	36,575	0
Miles of Roads Closed	0	9	1	0	0
Miles of Roads Constructed	0	6	6	6	6
Miles of Ways Closed [2]	30.5	20.5	8.5	1.75	0
Acres of Full Fee Estate Acquired [3,4]	0	6,260	2,100	1,468	0
Acres of Mineral Estate Acquired [5]	0	1,200	1,150	60	0
Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation [6]	71,240	56,642	36,026	32,035	0
Number of power plants developed	0	1	1	1	1
Number of mine sites developed	0	1	1	1	1
Miles of transmission lines constructed	0	3	3	3	3
Structural Wildlife Projects Developed: Stream Channel Projects (number) [7]	0	0	0	0	1
Structural Livestock Projects Developed: Springs (numbers)	0	1	1	1	1

[1] Except for 15 miles of roads and 30.5 miles of ways in the WSAs, most of the acreage shown is already closed to cross-country use through a "limited" ORV designation.

[2] 7.5 miles of ways area already closed under the off-highway vehicle designation associated with the Steens Mountain Recreation Lands.

[3] Includes 430 acres of State lands under the enhanced alternative and 410 acres of State land under the proposed action and partial alternatives.

[4] Upon acquisition, these additional lands would be incorporated into the wilderness area, closed to vehicle use, and withdrawn from mineral location and leasing.

[5] Upon acquisition of mineral estate, these lands would be withdrawn from mineral location and leasing.

[6] A total of approximately 4,480 acres in these WSAs are already withdrawn from mineral location and leasing through Congressional designation of the Donner und Blitzen River area as a wild river.

[7] The project involves the blasting of 24 holes in the stream channel along a 1/4 to 1/2 mile length.

Table 2. Summary of Environmental Consequences of Alternatives, High Steens WSA (OR-2-85F) and Little Blitzen Gorge WSA (OR-2-86F)

Resource or Activity	All Wilderness	Enhanced Wilderness	Partial	Proposed Action	No Wilderness/No Action
Wilderness Values	Wilderness designation of the entire 79,140 acres within the High Steens WSA and Little Blitzen Gorge WSA would result in the protection of the existing wilderness values and probable enhancement of those values.	Wilderness designation of the 70,630 acres (assuming acquisition of 6,260 acres of private and State land) would result in the protection of existing wilderness values and enhancement of those values. In the portion of the High Steens WSA recommended nonsuitable, projected energy, mineral and range developments would both directly and indirectly reduce wilderness values on approximately 7,200 acres, with further declines from other potential uses over the long term.	Wilderness designation of 44,460 acres in the High Steens WSA and Little Blitzen Gorge WSA would result in protection and enhancement of the existing wilderness values in the two WSAs. The 36,780 acres recommended nonsuitable would be subject to projected energy, mineral and range developments and improved access that would both directly and indirectly affect wilderness values on approximately 7,200 acres with further declines from other potential uses over the long term.	Wilderness designation of 38,043 acres would result in protection and enhancement of the more outstanding wilderness values of the two WSAs. The 42,525 acres recommended nonsuitable would be subject to projected resource activities that eventually would both directly and indirectly impair wilderness values over approximately 7,100 acres, with further declines from other potential uses over the long term.	In the absence of wilderness designation, projected management actions would directly and indirectly disturb wilderness values over approximately 13,000 acres of both WSAs, with further declines from other potential uses over the long term.
Energy and Mineral	Wilderness designation would result in foregone energy production from one projected 10-megawatt geothermal power plant. Wilderness designation would result in foregone production of mercury, gold and silver from one projected open-pit mine.	One 10-megawatt geothermal power source would be developed in the High Steens WSA outside the suitable wilderness recommendation. Projected development of one open-pit mine for gold, silver and mercury would occur in the High Steens WSA, outside the suitable wilderness recommended area.	One projected 10-megawatt geothermal power source would be developed in the High Steens WSA, outside the suitable wilderness recommendation. Projected development of one 150-acre open-pit mine for gold, silver and mercury production would occur in the High Steens WSA, outside the suitable wilderness recommended area.	One 10-megawatt geothermal power source would be developed in the High Steens WSA, outside the suitable wilderness recommendation. Projected development of one open-pit mine for gold, silver and mercury would occur outside the suitable wilderness recommended area.	One projected 10-megawatt geothermal power source would be developed. Projected development of one open-pit mine for gold, silver and mercury would occur.
Vegetation	Overall, existing vegetation would remain unchanged.	The vegetative composition would remain unchanged. The closure of roads and ways would revegetate 40 acres over time. The projected energy and mineral activity would directly disturb vegetative cover on 310 acres.	Overall vegetative composition would not substantially change. Proposed road and way closures would result in them revegetating naturally. Projected energy and mineral development would directly disturb vegetative cover on 310 acres.	Overall vegetative composition would not substantially change. Proposed ways and road closures would result in their natural revegetation. The projected mineral development would directly disturb vegetative cover on 310 acres.	The roads and ways would remain open and would not naturally revegetate. Projected range improvement development would enhance riparian vegetation. The projected energy and mineral development would directly disturb vegetative cover on 310 acres.
Wildlife	Wildlife habitat and populations would be maintained on 69,740 acres in the High Steens WSA and 9,400 acres within the Little Blitzen Gorge WSA. Proposals to improve habitat for whitehorse cutthroat trout would be foregone in High Steens WSA. The trapping of bighorn sheep would be allowed providing bighorns for reintroduction to other areas.	Wildlife habitat and populations would be maintained on 70,630 acres designated wilderness. Both deer and bighorn sheep populations would be reduced due to mining and geothermal development within the nonsuitable portion of the WSA. Habitat for chukars and small mammals would also be reduced.	Wildlife habitat and populations would be maintained on 44,460 acres designated wilderness. Both deer and bighorn sheep populations would be reduced due to mining and geothermal development within the nonsuitable portion of the WSA. Habitat for chukars and small mammals would also be reduced.	Wildlife habitat and populations would be maintained on 33,343 acres in the High Steens WSA and 4,600 acres in the Little Blitzen Gorge WSA. Both deer and bighorn sheep populations would be reduced due to mining and geothermal development within the nonsuitable portion of the WSA. Habitat for chukars and small mammals would also be reduced.	Bighorn sheep and and deer populations would be reduced due to mining and geothermal development. Habitat for chukars and small mammals would also be reduced with a proportional loss of individuals. Trout populations would increase.

Table 2. Summary of Environmental Consequences of Alternatives, High Steens WSA (OR-2-85F) and Little Blitzen Gorge WSA (OR-2-86F) (continued)

Resource or Activity	All Wilderness	Enhanced Wilderness	Partial	Proposed Action	No Wilderness/No Action
Watershed	Most of the perennial streams in both WSAs would stay in their present condition, and the remaining perennial streams would improve under the present livestock management system.	The projected mining activity would reduce water quality of either Indian Creek or Pike Creek. Other watersheds will either stay the same or improve under livestock management.	The projected mining activity would reduce water quality on either Pike Creek or Indian Creek. Other watersheds would either remain the same or improve under livestock management.	The projected mining activity would reduce the water quality on either Indian Creek or Pike Creek. Other watersheds would either stay the same or improve under livestock management.	The projected mining activity would create poor water quality on two perennial streams. Other watersheds would either stay the same or improve under livestock management.
Livestock Grazing	Livestock grazing use would be reduced by 206 AUMs to 4,702 AUMs in the High Steens WSA and remain at 1,248 AUMs in the Little Blitzen Gorge WSA. Vehicle use on 30.5 miles of ways would be precluded, with some inconvenience and slight increase in costs to livestock operators.	Livestock grazing use would be reduced by 206 AUMs to 4,702 AUMs in the High Steens WSA and remain at 1,248 AUMs in the Little Blitzen Gorge WSA. Vehicle use on 20.5 miles of ways and 9 miles of roads would be precluded, with some inconvenience and a slight additional expense to livestock operators.	Livestock grazing use would be reduced by 206 AUMs to 4,702 AUMs in the High Steens WSA and would remain at 1,248 AUMs in the Little Blitzen Gorge WSA. Vehicle use on 8.5 miles of ways and 1 mile of road would be precluded, with some increased cost and inconvenience to livestock operators.	Livestock grazing use would be reduced by 206 AUMs to 4,702 AUMs in the High Steens WSA and would remain at 1,248 AUMs in the Little Blitzen Gorge WSA. Vehicle use on 1.75 miles of ways would be precluded, with a slight increased cost and inconvenience to livestock operators.	Livestock grazing use would remain at 6,156 AUMs.
Recreation	Recreation use would decrease from the current level of 26,000 visitor days per year to approximately 23,000 visitor days per year.	Recreation use would decrease from the current level of 26,000 visitor days per year to approximately 21,000 visitor days per year. In the area recommended nonsuitable, recreation use is expected to remain the same.	Recreation use would decrease from the current level of 26,000 visitor days per year to approximately 24,000 visitor days per year.	Recreation use would decrease from the current level of 26,000 visitor days per year to approximately 24,000 visitor days per year.	Recreation use would increase from the current level of 26,000 visitor days per year to approximately 27,000 visitor days per year.
Local Personal Income	Annual local personal income would decrease by approximately $38,000.	Annual local pesonal income would decrease by approxmately $62,000.	Annual local personal would decrease by approximately $26,000.	Annual local personal would decrease by approximately $26,000.	Annual local personal would increase by approximately $12,000.

Table 3. Classification of Energy and Mineral Potential, High Steens WSA (OR-2-85F) and Little Blitzen Gorge WSA (OR-2-86F)

Commodity	Area	Level of Potential	Level of Certainty
Metals (mercury, copper,	2-85F; Part of 2-86F [1]	H	D
silver, gold, molybdenum)	Remainder of 2-86F [1]	M	B
Geothermal	Part of 2-85F [1]	H	D
	2-86F; Part of 2-85F	L	B
	Remainder of 2-85F	O	B
Uranium/Thorium	2-85F	L	B
	2-86F	L	C
Coal	All of both WSAs	O	D
Oil/Gas	All of both WSAs	L	B
Tar Sands/Oil Shale	All of both WSAs	O	D
Limestone	All of both WSAs	O	D
Diatomite	All of both WSAs	O	C
Bentonite	Part of 2-85F [1]	M	B
	2-86F; remainder of 2-85F	O	C
Zeolite	Part of 2-85F [1]	M	B
	2-86F	O	B
	Remainder of 2-85F	O	C
Sodium	2-85F	L	A
	2-86F	O	B
Perlite	Part of 2-85F	H	D

[1] See Map 7

Legend:

Level of Potential

O - No indication for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Moderate potential for accumulations of energy/mineral resource
H - High potential for accumulations of energy/mineral resource

Level of Certainty

A - Insufficient data or no direct evidence
B - Indirect evidence available
C - Direct evidence but quantitatively minimal
D - Abundant direct and indirect evidence

Table 4. Plants Found (denoted by "x") in High Steens WSA (OR-2-85F) and Little Blitzen Gorge WSA (OR-2-86F) which are on List 2 of Oregon Natural Heritage Plan's "Rare, Threatened, and Endangered Plants and Animals of Oregon."

Species	High Steens	Little Blitzen Gorge
Botrychium boreale, northern grapefern	x	
Botrychium lanceolatum, land-leaved grapefern	x	x
Botrychium lunaria, moonwort	x	x
Botrychium simplex, little grapefern	x	x
Cymopterus bipinnatus, Hayden's cymopterus	x	x
Gentiana prostrata, moss or pygmy gentian	x	x
Melica stricta, nodding melic		x
Saxifraga Adscendens var. Oregonensis, wedge-leaf Saxifrage	x	
Gentiana tenella, slender gentian	x	x

Table 5. Existing Livestock Use, High Steens WSA (OR-2-85F) and Little Blitzen Gorge WSA (OR-2-86F)

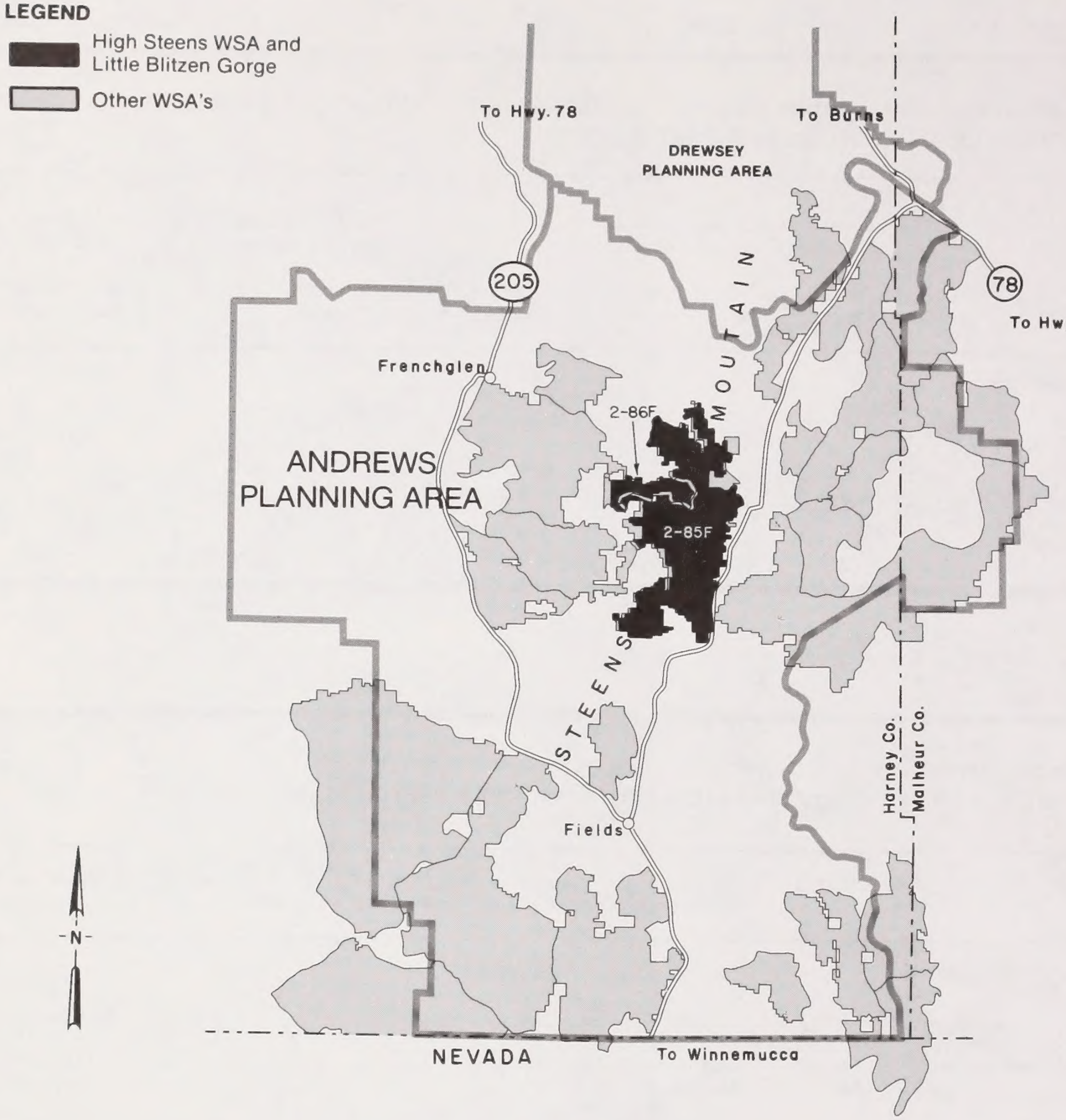
Grazing Allotment	Licensed AUMs in Allot.	Period of Use	Percent of Allot. in WSA	Current Estimated Use in WSA (AUMs)
High Steens WSA				
South Steens (No. 6002)	23,681	07/16-10/15	7	2,173
Otley Bros. (No. 6010)	3,654	06/01-10/31	37	1,370
Alvord (No. 6012)	9,072	04/16-06/30	8	312
Wildhorse Canyon (No. 6013)	209	06/16-08/31	100	209
Andrews (No. 6019)	3,852	04/16-07/15	22	539
Mann Lake (No. 6026)	3,670	06/01-06/30	15	305
Steens Summit (No. 6004)	0	No Use	24	0
Total High Steens	44,138			4,908
Little Blitzen Gorge WSA				
South Steens (No. 6002)	23,681	08/01-10/31	2	1,043
Fish Creek-Big Indian (No. 6003)	1,410	08/01-10/31	6	205
Steens Summit (No. 6004)	0	No Use	75	0
Total Little Blitzen	25,091			1,248
Totals both WSAs				6,156

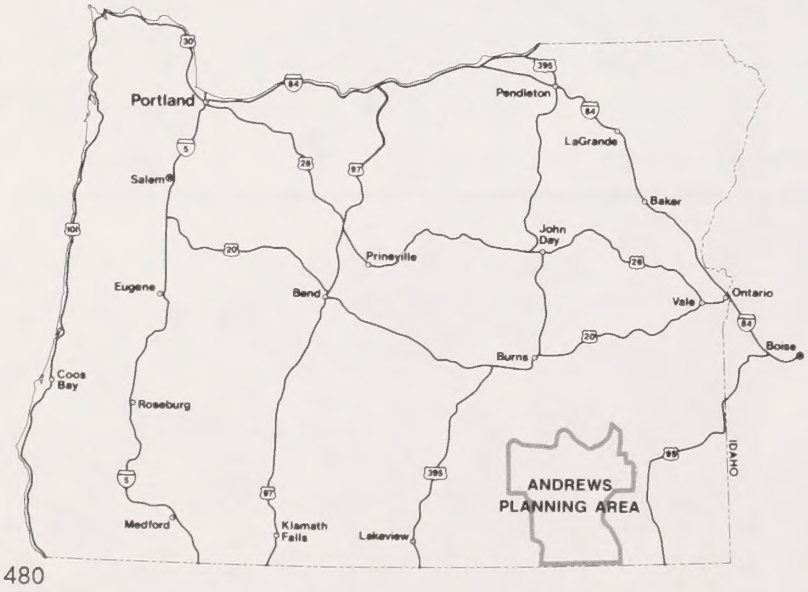
Table 6. Summary of Fish and Riparian Habitat in the Suitable Areas Under Each Alternative, High Steens WSA (OR-2-85F0 and Little Blitzen Gorge WSA (OR-2-86F)

	All Wilderness		Enhanced Wilderness		Partial		Proposed Action		No Wilderness/ No Action	
	Fish Habitat	Riparian Habitat	Fish Habitat	Riparian Habitat	Fish Habitat	Riparian Habitat	Fish Habitat	Riparian Habitat	Fish Habitat	Riparian Habitat
Public Land Recommended as Suitable (Stream Miles)	41.0	73.0	37.0	55.0	24.0	47.0	24.3	47.3	0	0
Lands to be Acquired (Stream Miles)	0	0	9.6	16.5	2.3	7.1	4.8	9.6	0	0
Totals	41.0	73.0	46.6	71.5	26.3	54.1	29.1	56.9	0	0

Table 7. Effects of Alternatives on Local Personal Income, High Steens and Little Blitzen Gorge WSAs (OR-2-85F) and (OR-2-86F) (1981 price levels)

Item	Unit of Measure	All Wilderness	Enhanced Wilderness	Partial Wilderness	Proposed Wilderness	No Wilderness/ No Action
CHANGES IN RESOURCE OUTPUTS						
Livestock Grazing	AUMs	-206	-206	-206	-206	No Change
Energy & Mineral Development:						
10-MW Geothermal Powerplants	Number	No Change	+1	+1	+1	+1
Metallic Mines	Number	No Change	+1	+1	+1	+1
Recreation Use	RVD	-3,000	-5,000	-2,000	-2,000	+1,000
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES						
Livestock Grazing	$	-2,472	-2,472	-2,472	-2,472	0
Energy & Mineral Development:						
10-MW Geothermal Powerplants	$	0	Unknown	Unknown	Unknown	Unknown
Metallic Mines	$	0	Unknown	Unknown	Unknown	Unknown
Recreation Use	$	-36,000	-60,000	-24,000	-24,000	+12,000
Total	$	-38,472	-62,472	-26,472	-26,472	+12,000





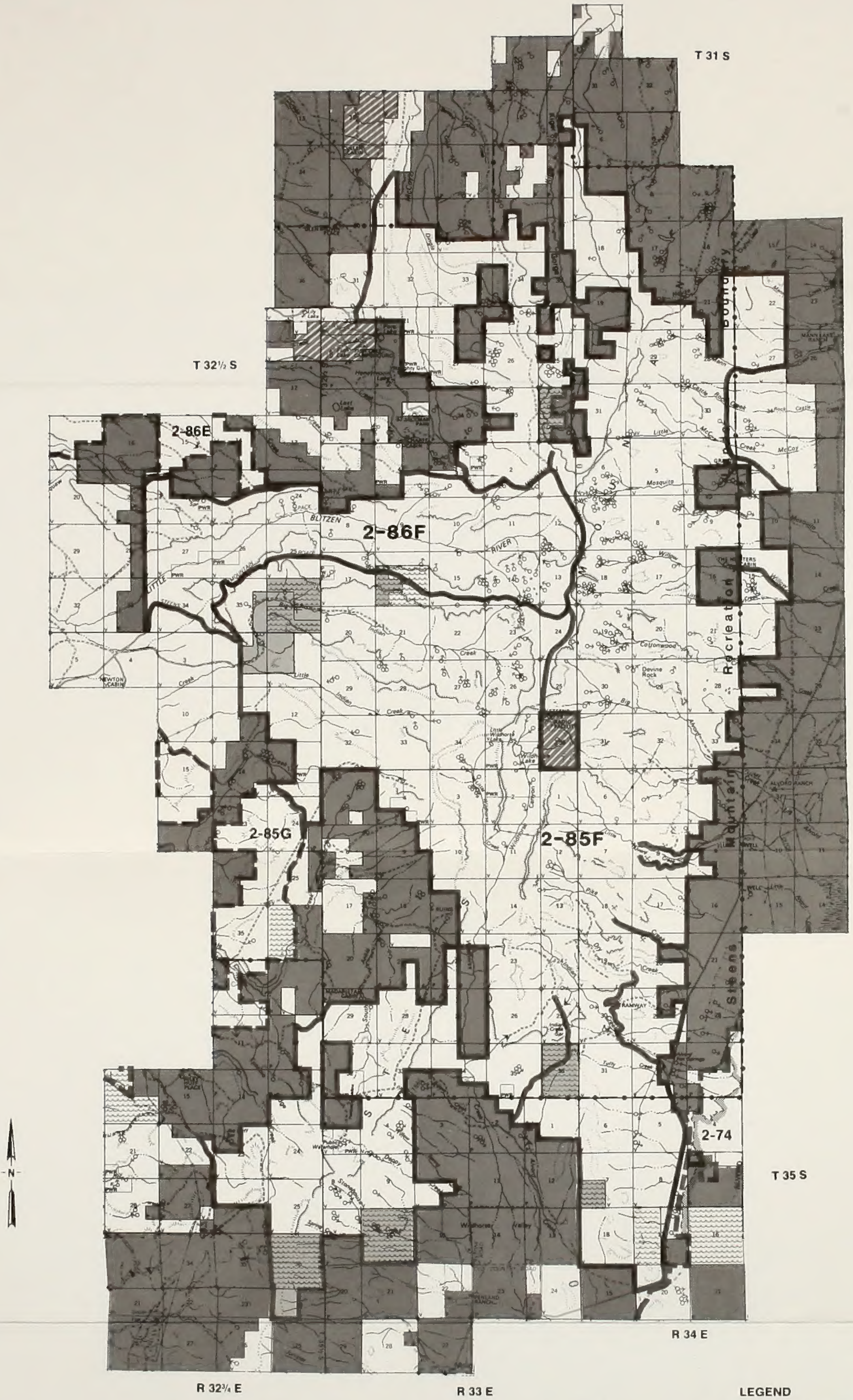
U. S. Department of the Interior
Bureau of Land Management

Burns District
High Steens WSA
OR-2-85F and
Little Blitzen Gorge
OR-2-86F

LOCATION MAP

10 0 10 MILES

MAP 1



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Bureau of Land Management

Burns District

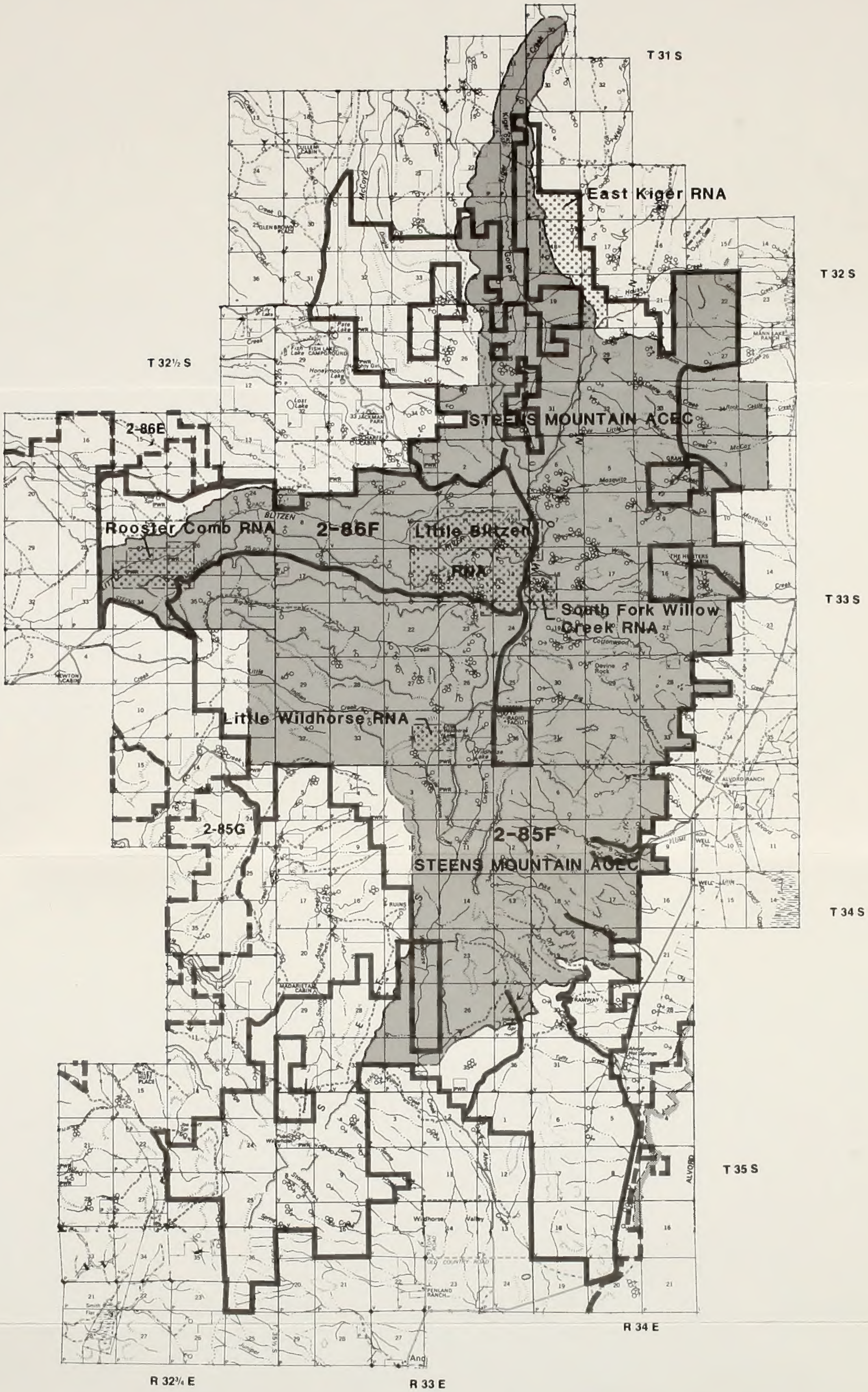
High Steens WSA
OR-2-85F and
Little Blitzen Gorge
OR-2-86F

LAND OWNERSHIP

LEGEND

- ▒ BLM Land Studied Under Section 202 of FLPMA (Other BLM Land in WSA Studied Under Section 603 of FLPMA)
- ━ Wilderness Study Area Boundary
- ╍ Boundary of Adjacent Wilderness Study Areas
- ☐ Bureau of Land Management
- ▨ State
- ■ Private
- ▤ BLM Surface-State or Private Subsurface (Split Estate)

MAP 2



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Burns District

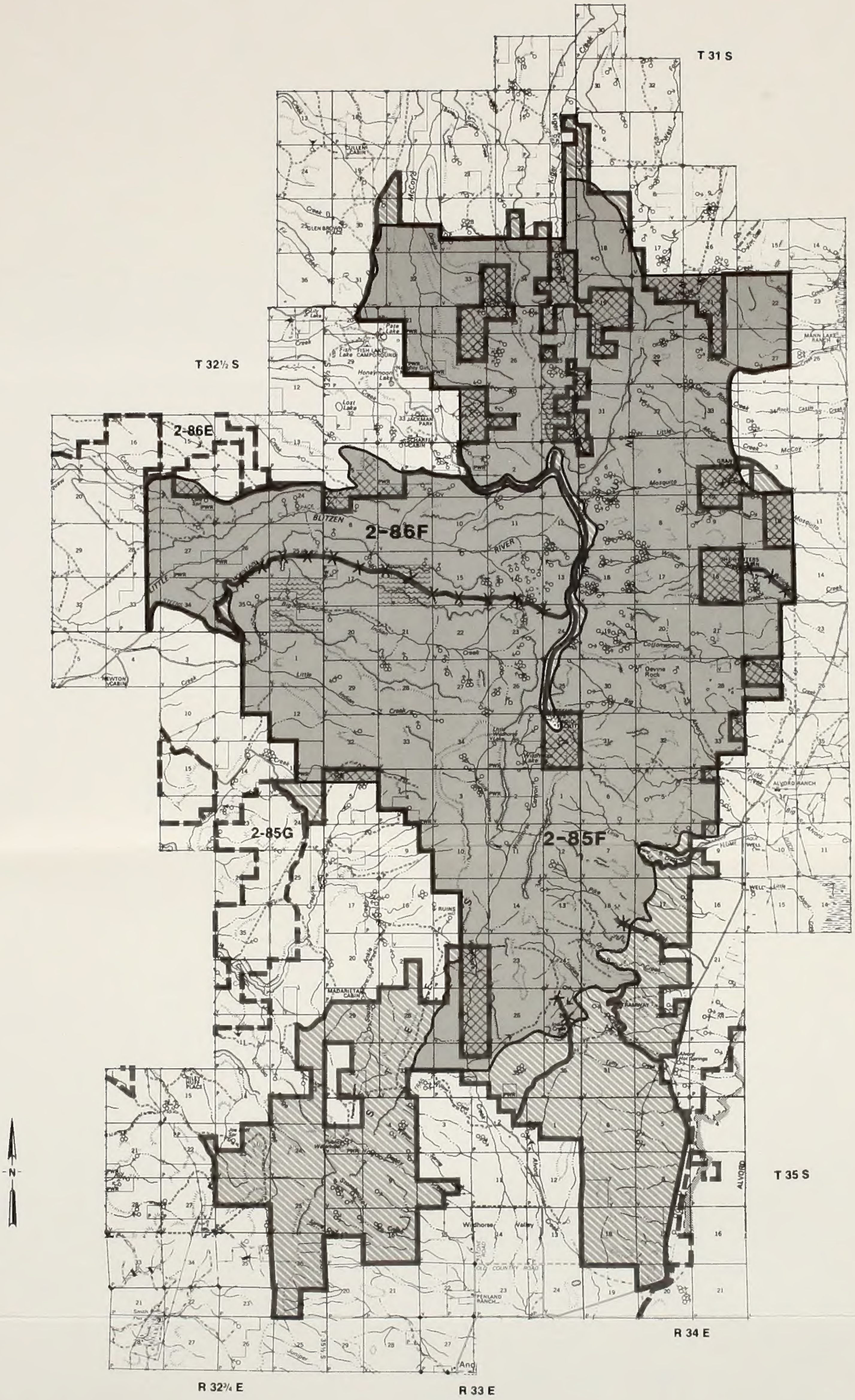
High Steens WSA
OR-2-85F and
Little Blitzen Gorge
OR-2-86F

AREAS OF CRITICAL ENVIRONMENTAL CONCERN & NATURAL RESEARCH AREAS

1 0 1 2 MILES

MAP 3

- ▬ Wilderness Study Area Boundary
- ▬ ▬ Boundary of Adjacent Wilderness Study Areas
- ▨ Areas of Critical Environmental Concern Boundary (ACEC)
- ⬚ Research Natural Areas Boundary (RNA)



U. S. Department of the Interior
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Burns District

High Steens WSA
OR-2-85F and
Little Blitzen Gorge
OR-2-86F

ENHANCED ALTERNATIVE

1 0 1 2 MILES

MAP 4

▬ Wilderness Study Area Boundary

╍ Boundary of Adjacent Wilderness Study Areas

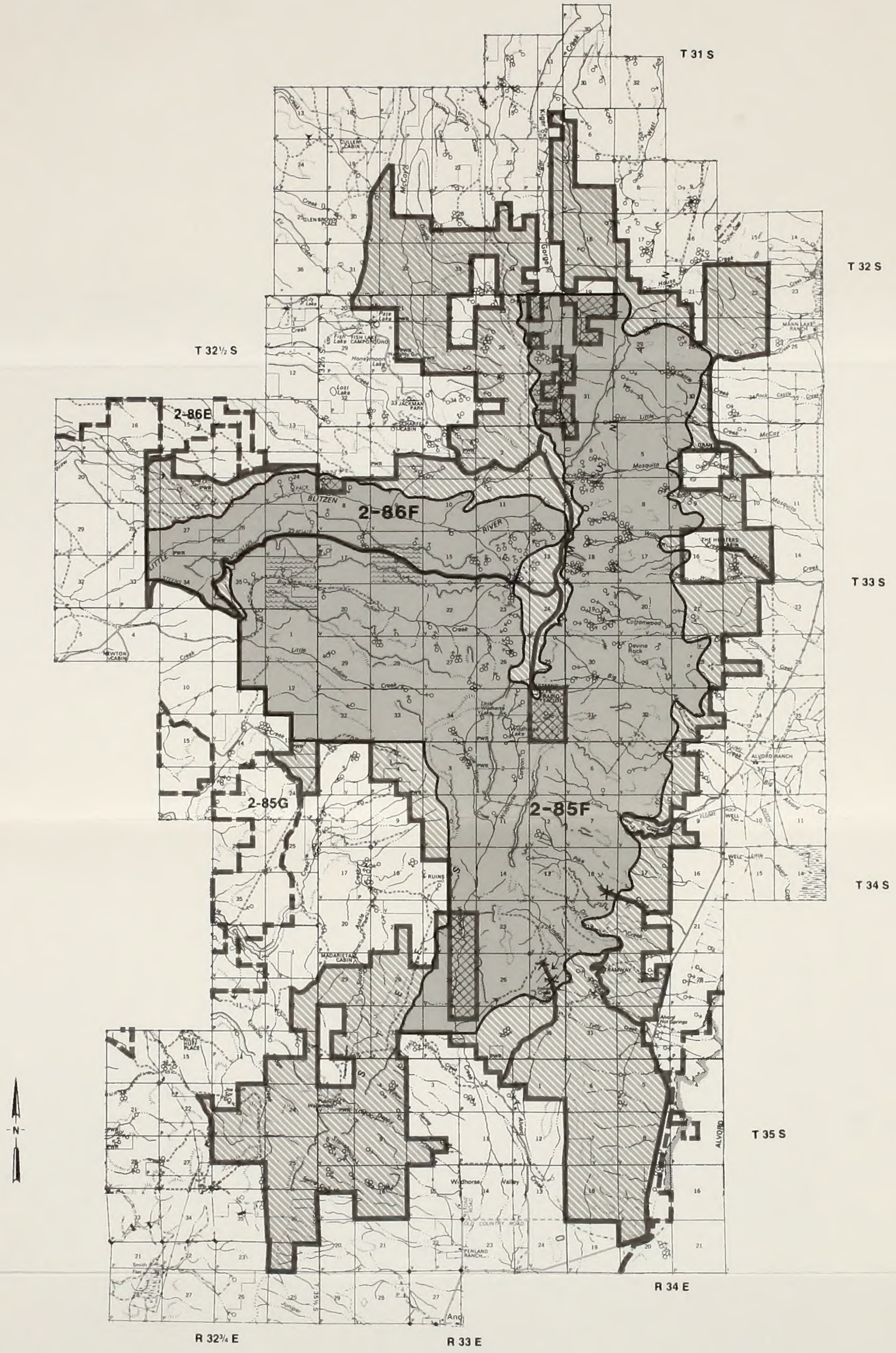
▩ Recommended Suitable for Wilderness

▨ Recommended Non-suitable for Wilderness

▦ Non-Federal Land within Recommended Wilderness

▤ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness

✕ Recommended Road Closure



U. S. Department of the Interior
Bureau of Land Management

Burns District

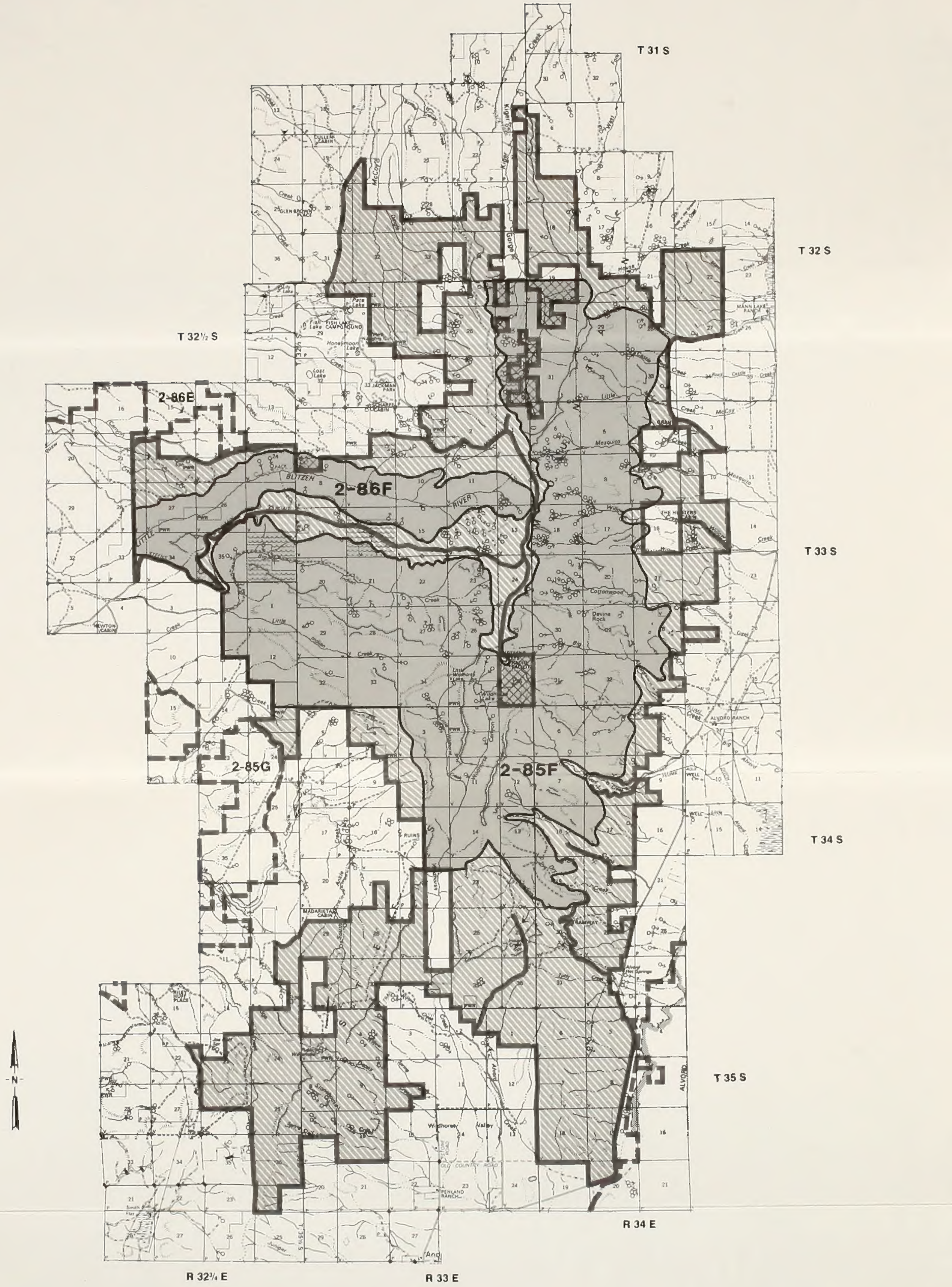
High Steens WSA
OR-2-85F and
Little Blitzen Gorge
OR-2-86F

PARTIAL ALTERNATIVE

1 0 1 2 MILES

MAP 5

- ▬ Wilderness Study Area Boundary
- ╍ Boundary of Adjacent Wilderness Study Areas
- ▩ Recommended Suitable for Wilderness
- ▨ Recommended Non-suitable for Wilderness
- ▦ Non-Federal Land within Recommended Wilderness
- ▤ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness
- X—X Recommended Road Closure



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Bureau of Land Management

Burns District

High Steens WSA
OR-2-85F and
Little Blitzen Gorge
OR-2-86F

PROPOSED ACTION

1 0 1 2 MILES

▬ Wilderness Study Area Boundary

▬ ▬ Boundary of Adjacent Wilderness Study Areas

▢ Recommended Suitable for Wilderness

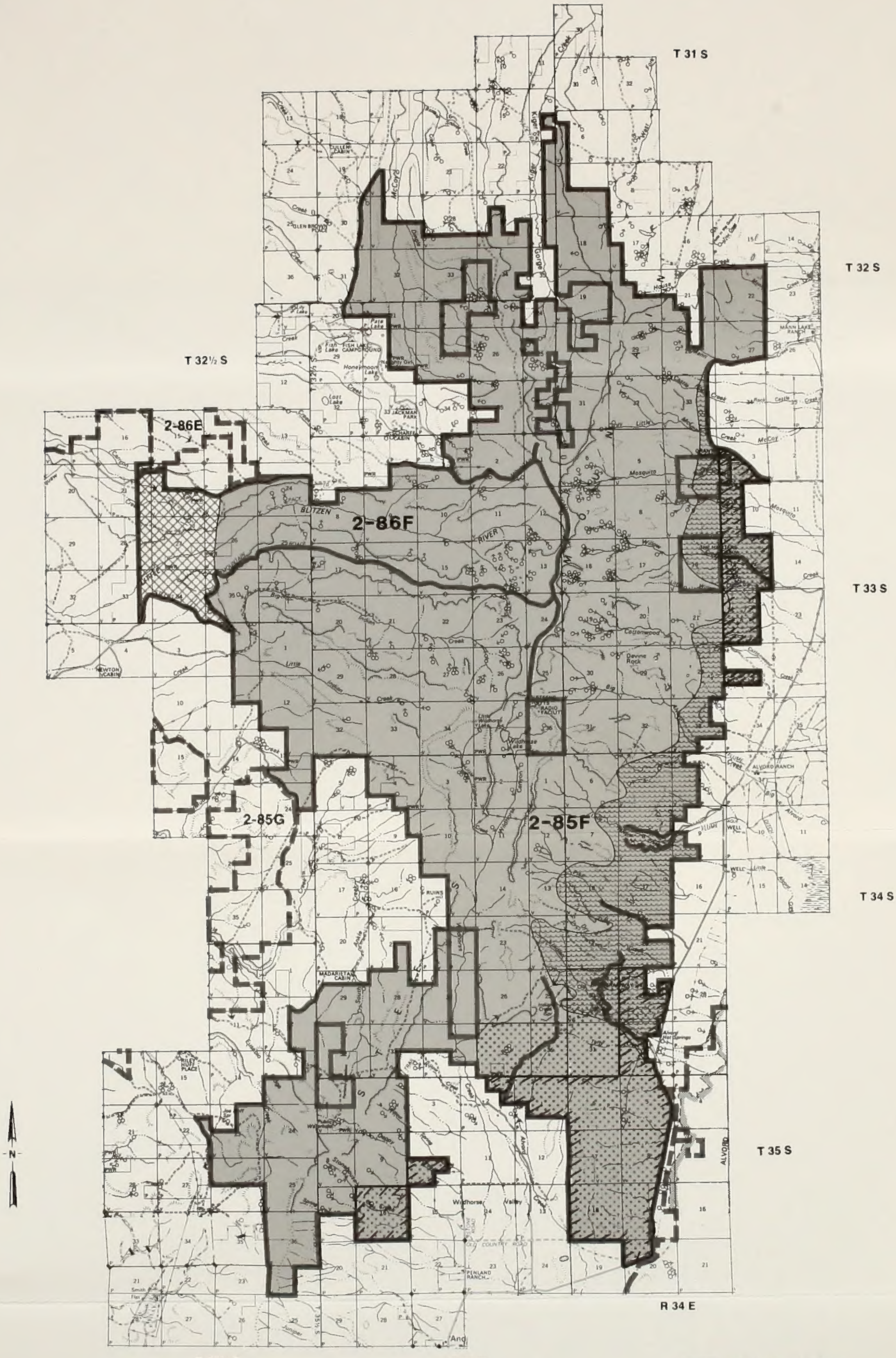
▨ Recommended Non-suitable for Wilderness

▩ Non-Federal Land within Recommended Wilderness

▤ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness

✗✗ Recommended Road Closure

MAP 6



▨ **High Potential**
(HD) for Mercury, Copper, Gold, Silver and Molybdenum

▩ **Moderate Potential**
(MB) for Mercury, Copper, Gold, Silver and Molybdenum

▤ **Moderate Potential**
(MB) for Bentonite and Zeolites

░ **High Potential**
(HD) for Geothermal Resources

▧ **Portion of WSA within known Geothermal Resource Area**

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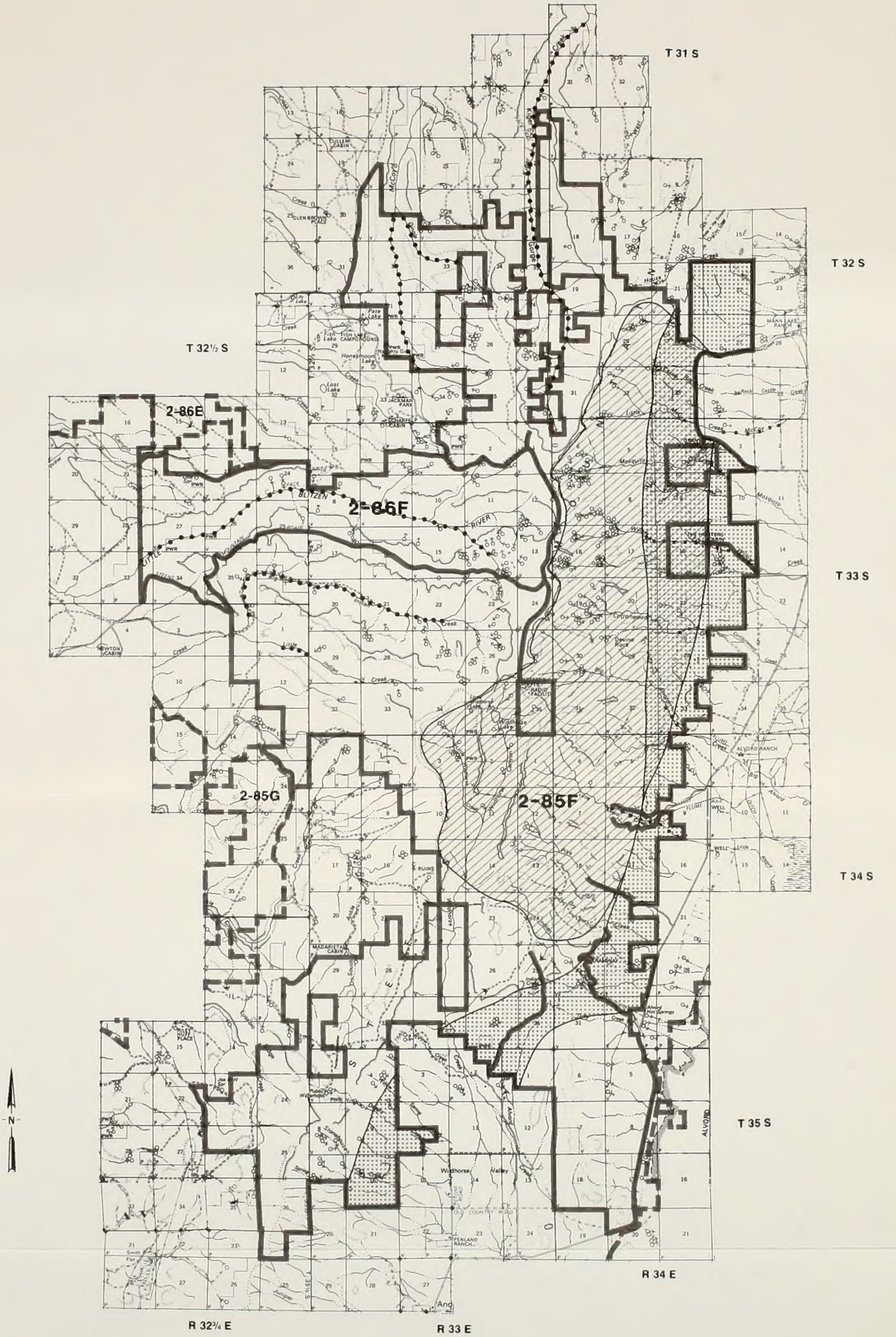
Burns District

High Steens WSA
OR-2-85F and
Little Blitzen Gorge
OR-2-86F

MODERATE OR HIGH POTENTIAL
MINERAL OR ENERGY RESOURCES

1 0 1 2 MILES

MAP 7



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Burns District

High Steens WSA
OR-2-85F and
Little Blitzen Gorge
OR-2-86F

SPECIAL FEATURES

1 0 1 2 MILES

▨ Deer Winter Range

• • • Redband Trout

• • • • Whitehorse Cutthroat Trout

▨ California Bighorn Sheep

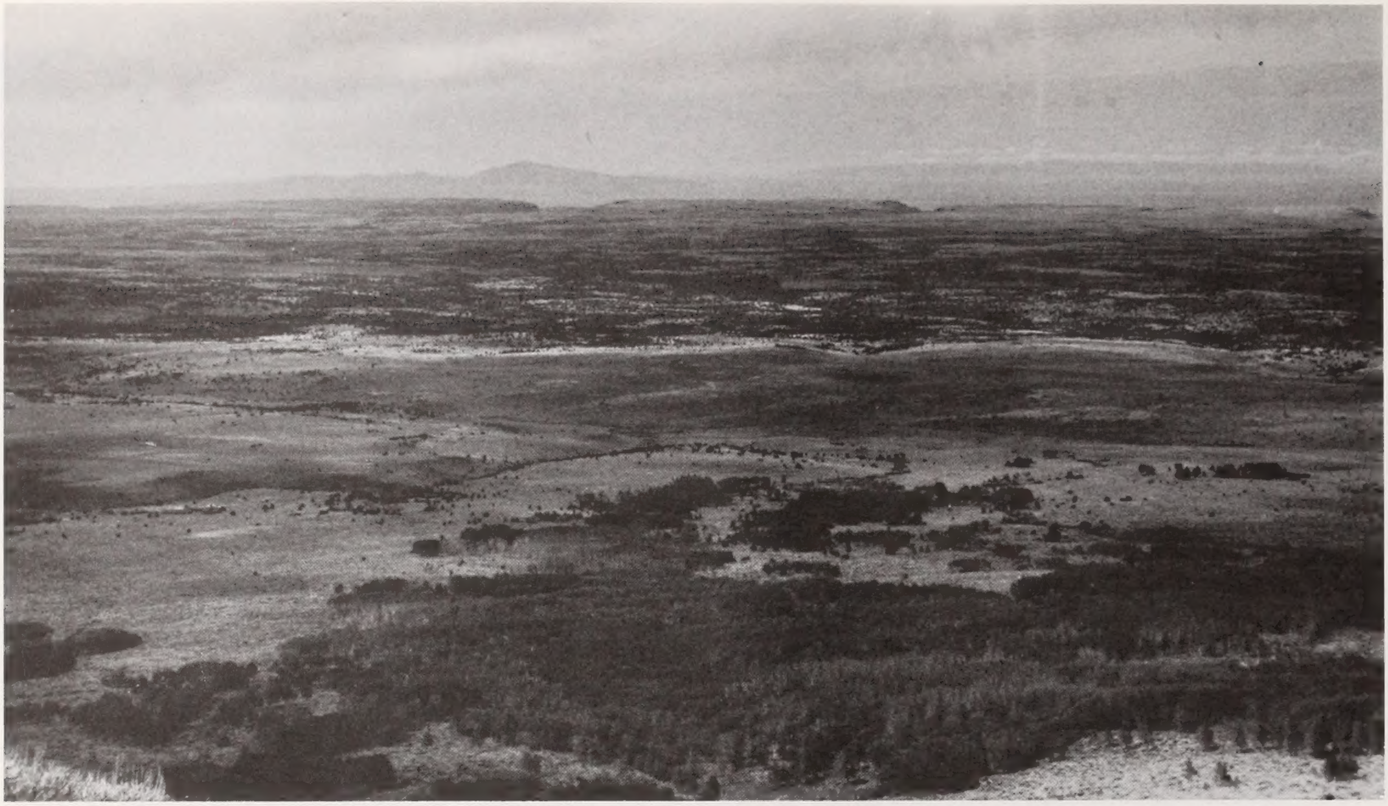
MAP 8

High Steens WSA, OR-2-85F. The overlook at the head of Kiger Gorge looking north. Most of the area seen here is suitable under the proposed action, enhanced, and partial alternatives. Kiger Gorge is the largest of the five "U" shaped glaciated gorges in the High Steens WSA. It averages over a mile in width and more than 2000 feet deep. Large portions of the canyon bottom are privately owned. July 1983.

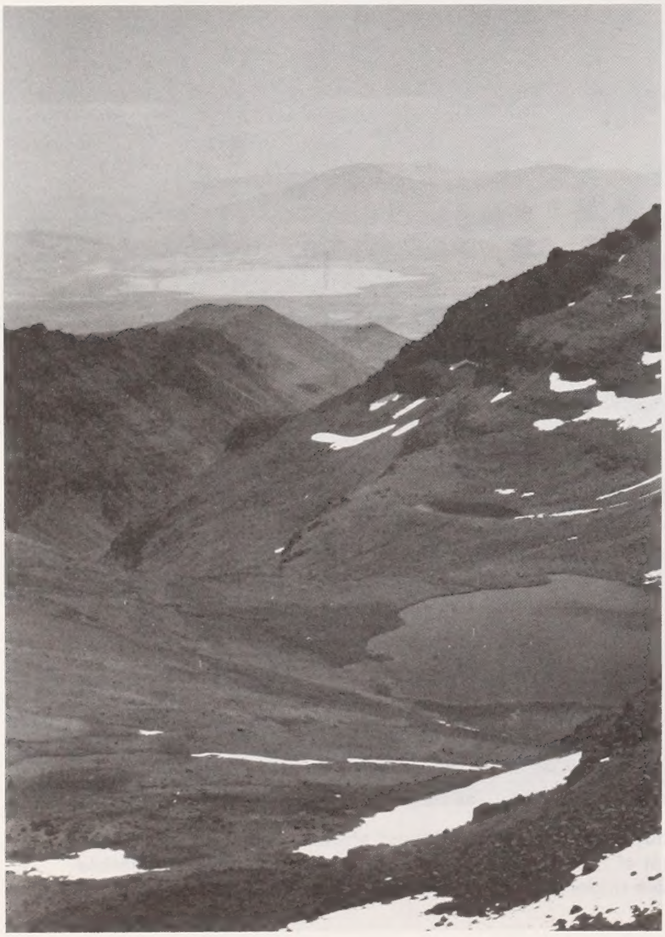
High Steens WSA, OR-2-85F. The southeastern corner of the study area, looking northwest showing some of the lower foothills as well as the high steep east face of the mountain. Most of the lower slopes in the foreground are nonsuitable under the proposed action, while the upper elevations are suitable under the enhanced and partial alternatives. April 1984.

High Steens WSA, OR-2-85F. The overlook at the head of Kiger Gorge looking north. Most of the area seen here is suitable under the proposed action, enhanced, and partial alternatives. Kiger Gorge is the largest of the five "U" shaped glaciated gorges in the High Steens WSA. It averages over a mile in width and more than 2000 feet deep. Large portions of the canyon bottom are privately owned. July 1983.

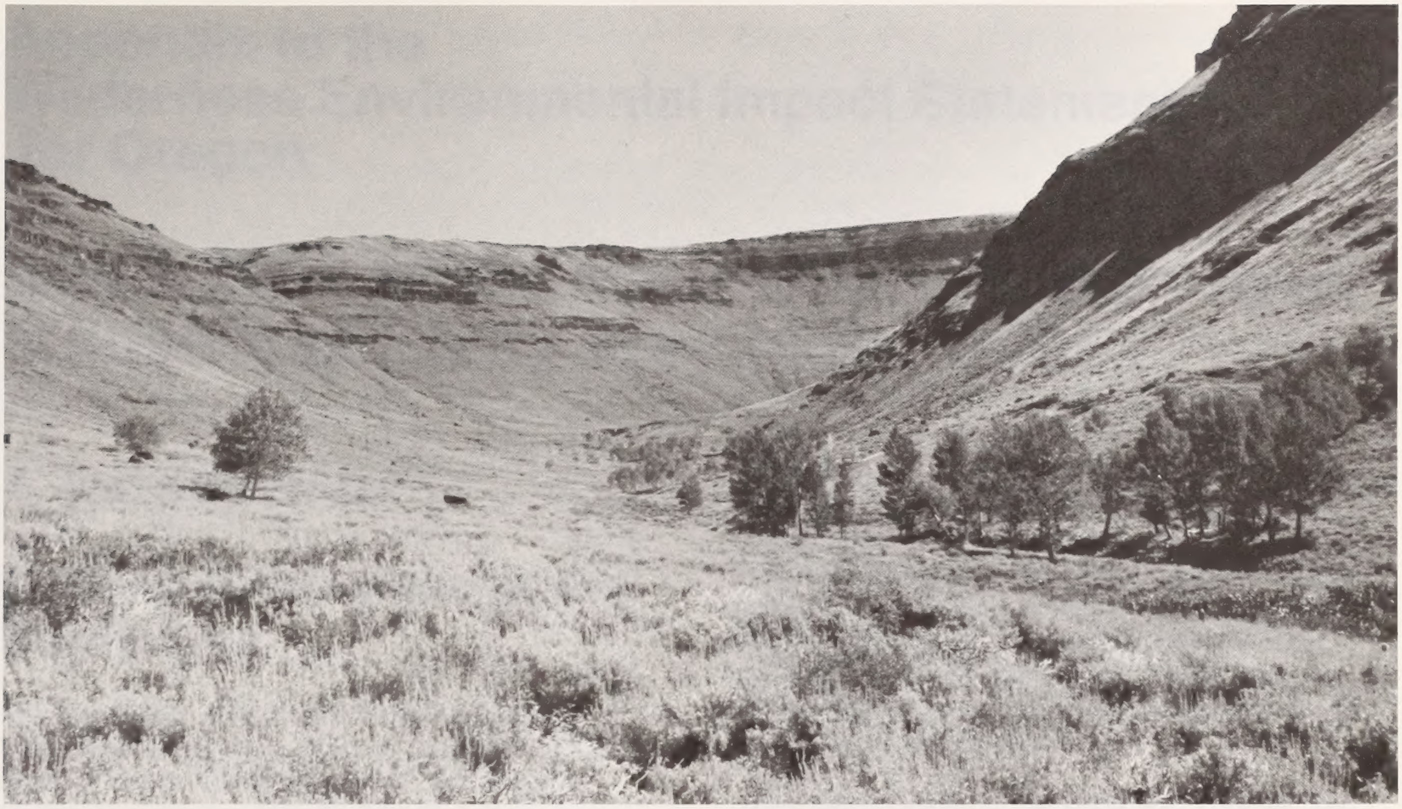
High Steens WSA, OR-2-85F. The southeastern corner of the study area, looking northwest showing some of the lower foothills as well as the high steep east face of the mountain. Most of the lower slopes in the foreground are nonsuitable under the proposed action, while the upper elevations are suitable under the enhanced and partial alternatives. April 1984.



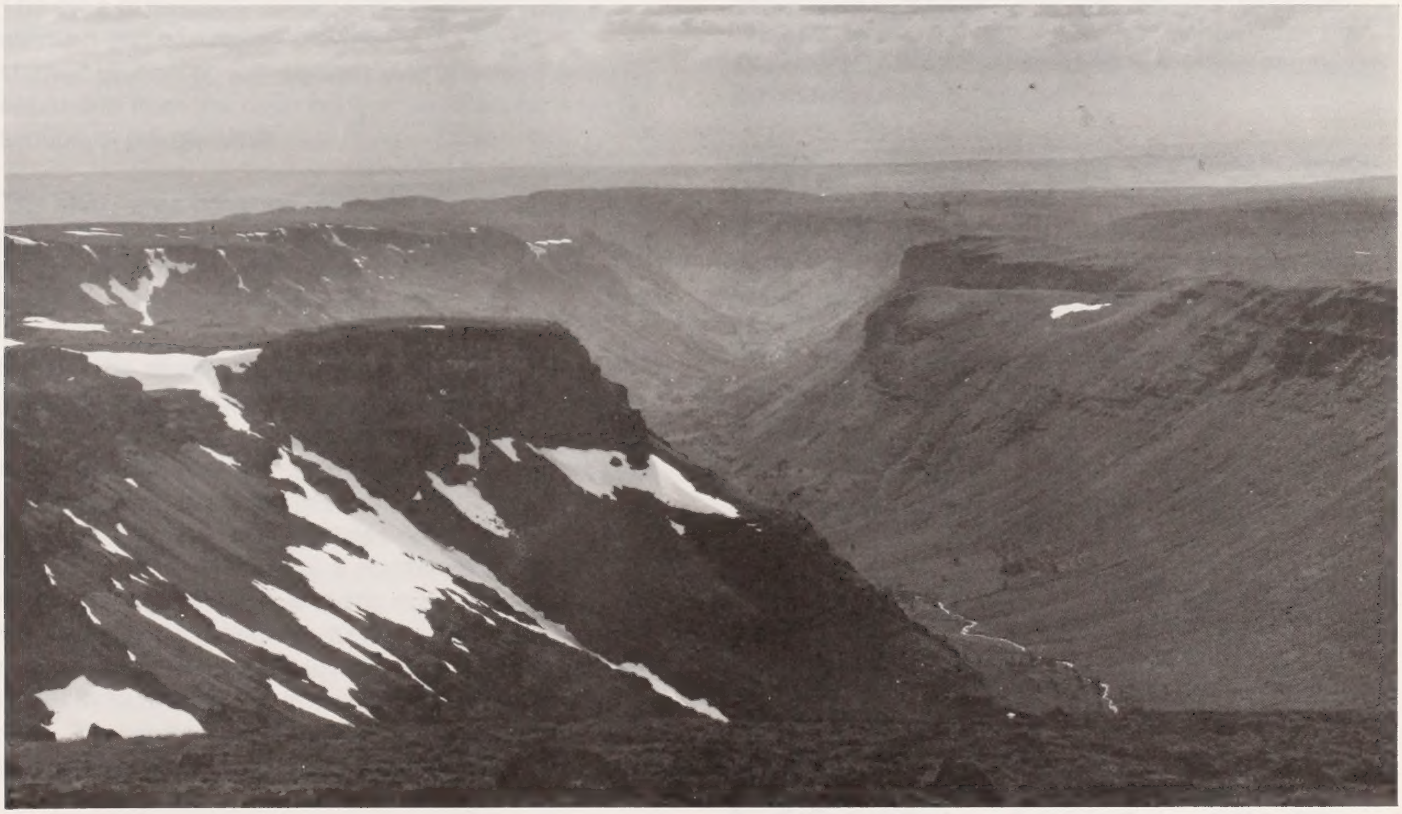
High Steens WSA, OR-2-85F. Looking southwest from the western slope of the mountain across the remainder of the Steens fault block. Only the immediate foreground is included within the study area but it is nonsuitable under the proposed action and partial alternative and suitable under the enhanced alternative. The prominent features in the background include Home Creek Canyon (just left of center), Dry Creek Canyon (just right of center), and Beaty Butte (the peak on the horizon about 40 miles away). September 1983.



High Steens WSA, OR-2-85F. Looking south from the head of Wildhorse Canyon near the top of the Steens. All of this drainage is suitable under the enhanced, partial and proposed action alternatives. Features outside the WSA which can be seen from this point include Alvord Lake (middle ground), the Pueblo Mountains (background center and right) and mountains in Nevada (faintly visible on the horizon). Wildhorse Lake, the larger of the two, like the other features in the canyon, is glacially formed. August 1983.



Little Blitzen Gorge WSA, OR-2-86F. The upper end of the Little Blitzen Gorge looking east. Within the area recommended suitable under the enhanced, partial and proposed action alternatives. The Little Blitzen Gorge is one of the glacially carved U-shaped canyons of Steens Mountains. September 1983.



Little Blitzen Gorge WSA, OR-2-86F. The eastern boundary area (the Steens Loop Road) looking west. Within the area recommended suitable under the enhanced alternative. The area to the left of the northern rim of the canyon (the canyon wall on the right) is suitable (the remainder is unsuitable) under the proposed action and partial alternatives. Heavy snowpacks remain on the more protected north facing slopes well into the summer. July 1983.

Appendix to the Wilderness Environmental Impact Statement for Oregon

South Fork of the Donner und Blitzen River Wilderness Study Area (OR-2-85G)

1. Introduction

General Description of the Study Area

The South Fork of the Donner und Blitzen River Wilderness Study Area (WSA) is located 74 miles south of Burns (12 miles south of Frenchglen) in Harney County (see Map 1). The study area lies along the southern section of the Steens Mountain Loop Road, 7 miles east of State Highway 205.

The area is basically rectangular in shape, with the western end narrowing somewhat. A roughly "L" shaped portion on the eastern side is almost entirely separated from the main body of the area by a large section of private land.

The study area contains approximately 37,555 acres of public land (see Map 2). In addition, 1,320 acres of private land are located within the WSA, as well as 1,705 acres of split-estate land.

Most of the study area is bounded by BLM roads with adjacent public lands. The northern boundary line of the area is formed entirely by the southern extension of the Steens Mountain Loop Road. The western and southwestern boundary lines are formed by BLM roads and two parcels of private land. The eastern boundary line is formed by a combination of BLM roads and private land, with the majority of the boundary being formed by private land. The southern section of the Steens Mountain Loop Road forms the northern boundary line of the WSA and is a gravel road. The western, southern and portions of the eastern boundary lines are located along dirt roads.

The South Fork of the Donner und Blitzen River WSA is located within the central portion of the physiographic feature known as the Steens Mountain Fault Block. Most of the terrain is flat to gently rolling. The major feature of the WSA is the river corridor. Located in the eastern portion of the study area, the river flows from south to north. Of the 8.5 miles of river associated with this study area, 6 miles flow across public land, approximately 2 miles flow through private land just outside the boundary, while 0.5 mile crosses a private inholding. Small segments of three other perennial streams (Indian Creek, Deep Creek and Ankle Creek) also pass through the study area and drain into the South Fork.

The eastern portion of the study area contains the greatest amount of topographic diversity. The river and creeks all flow through canyons which range from 100 to 200 feet in depth. Overall, the elevation of the study area averages 5,800 feet, with the extremes ranging from 5,100 feet in the river bottom near the northeastern boundary to 6,500 feet in the southeastern corner of the "L" shaped extension.

Juniper and low sagebrush are the dominant vegetation in the study area. Most of the juniper trees are located within the eastern two-thirds of the WSA. Low sagebrush occurs throughout most of the study area, but is most common in the western portions. A variety of grasses are also found within the area. The river and the larger creeks contain riparian vegetation, and a grove of aspen is located within the Deep Creek drainage.

Interrelationships

The study area is adjacent to three other WSAs. On the north, the southern section of the Steens Mountain Loop Road separates the South Fork WSA from the Blitzen River WSA (OR-2-86E). On the west, another BLM road divides the South Fork WSA from the Home Creek WSA (OR-2-85H), and to the east a BLM road separates the "L" shaped extension of the South Fork WSA from the High Steens WSA (OR-2-85F).

Most of the northern and northeastern portions of the study area fall within the BLM-managed Steens

Mountain Recreation Lands, 193,856 acres of land on Steens Mountain designated by BLM as a special management area. This was done in 1971, in cooperation with local groups and other government agencies as well as private landowners. The purpose of the designation is to maintain a multiple use management concept on the mountain while protecting the area's natural condition.

The WSA is located within the ODFW's Steens Mountain Wildlife Management Unit, which contains 1,916-square-miles of land. The WSA provides summer range for an estimated 400 deer, 50 antelope and 15 elk and winter range for an estimated 15 elk. ODFW's management objective is for 11,000 deer within the entire management unit. ODFW has not set management objectives for antelope or elk. Redband trout, found in streams in the WSA, are also a candidate species. ODFW has a management objective to manage for wild trout. The ODFW goal for nongame wildlife is to maintain populations of naturally-occurring species at self-sustaining levels. ODFW conducts summering antelope herd composition counts by low level aerial flights. The proposed action for this WSA conforms with ODFW's management goals for game and nongame species.

Most of the study area is in the South Steens Wild Horse Herd Management Area (HMA). Management of the HMA will not be significantly affected by any of the alternatives.

The portion of the Donner und Blitzen River flowing through the WSA is part of a 73-mile segment of the river that has been designated a wild river component of the National Wild and Scenic Rivers system. The federal designation withdraws from mineral location and leasing all public lands within 0.25-mile on each side of the river (approximately 1,280 acres in the WSA).

The restrictions for the Wild and Scenic River designation would continue to apply whether or not the area is designated wilderness.

Harney County has not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study and EIS planning, scoping, and public review process. These issues concern both the effects of wilderness designation on existing and potential land uses or resources in the WSA, as well as the effects of existing and potential land uses or resources on wilderness values.

Land uses or resources raised as issues specifically for this WSA include:

- impact on the area's wilderness values;
- impact on the existing designation of a portion of the WSA as part of the Steens Mountain Recreation Lands (the designation would not be affected, but the management plan for the recreation lands would need revision);
- impact on management of wild horses in the area (see Statewide EIS volume);
- impact on potential energy and mineral development;
- impact on deer, antelope, elk and sensitive species populations and habitat;
- impact on livestock grazing use levels; and
- impact on recreation use levels.

No other issues specific to this WSA were raised by the BLM or the public.

2. Description of the Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made.

The following alternatives are analyzed:

- all wilderness
- enhanced wilderness
- no wilderness/no action (proposed action)

The possibility of combining this study area with the three adjacent WSAs is not analyzed. The roads which divide the South Fork of the Donner und Blitzen River WSA from the Blitzen River WSA to the north, and Home Creek WSA to the west, are important BLM roads which provide access for private landowners, ranchers, BLM personnel, hunters, general recreationists and sightseers.

one road which divides the South Fork WSA from the High Steens WSA to the east is used for access purposes, but to a lesser extent. In this case, however, the boundary between the two study areas is less than 1 mile and is not near the area of high recreation use for either of the WSAs. Also, such a combination would do little to enhance the wilderness values of either study area without the acquisition of extensive private land.

Although considered, an alternative recommending only part of the WSA as suitable for wilderness is not developed for this study area. Areas where wilderness management would conflict with other resource uses are not confined to a particular portion of the WSA; therefore, an analysis of an alternative recommending only part of the area as suitable for wilderness is not warranted.

All Wilderness

The all wilderness alternative would recommend all 37,555 acres of public land within the study area suitable for wilderness (see Map 2). For purposes of analysis, it is assumed the private inholdings and mineral estate of split-estate lands would not be acquired. Twenty-eight miles of ways within the study area would be closed under this alternative.

Energy and Mineral Development Actions

The all wilderness alternative would withdraw 34,570 acres of public land from all forms of appropriation under mining and mineral leasing laws. In this alternative, approximately 1,280 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships. The 1,705 acres of split-estate land would remain open to energy and mineral development. There are no energy resources with moderate or high potential for occurrence in the WSA.

Diatomite is given a moderate potential for occurrence which is supported by quantitatively minimal, but direct, evidence. However, there are no known deposits of sufficiently large ore bodies that would merit development. There is a producing diatomite mine in the region, with ample reserves, leading to the conclusion that there will be no need for the suspected diatomite deposits within the WSA. Therefore, no development or exploration of diatomite is projected in the WSA, including the split-estate and private lands.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing management plan goals to ensure sufficient forage for wildlife.

Livestock Management Actions

Livestock grazing use would remain at the current use level of approximately 4,940 AUMs in the portion of the South Steens allotment located within the WSA. The season of use would remain from April 15 to October 31.

Vehicle use for livestock management on 28 miles of ways would be precluded. Management of livestock and maintenance of 2 miles of fence, 15 reservoirs and a corral would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years to maintain the 15 existing reservoirs.

Recreation Management Actions

The entire 37,555 acres of this study area would be closed to motor vehicle use, including 28 miles of ways. Vehicle use in over half of the WSA is limited to designated existing roads and ways under the off-highway vehicle designation associated with the Steens Mountain Recreation Lands. Current overall recreation use in the WSA is approximately 3,000 visitor days per year.

Enhanced Wilderness

The enhanced wilderness alternative would recommend all 37,555 acres of public land in the study area suitable for wilderness (see Map 3). Also, an attempt would be made to acquire a total of 4,420 acres of private land (both within and adjacent to the WSA) and the mineral estate of 1,705 acres of split-estate lands within the recommended boundary. The land and mineral estate could be acquired through purchase or exchange with willing owners. Assuming acquisition of private land, the total area recommended suitable under this alternative would be 41,975 acres. Twenty-eight miles of ways would be closed under this enhanced wilderness alternative.

With the exception of minor adjustments to reflect the acquisition of private lands, there would be no major changes in the boundary of the suitable area under this alternative.

This alternative would give wilderness protection to the lower elevation plateau country associated with Steens Mountain. In addition, a large portion of the upper drainage of the Donner und Blitzen River and portions of its tributaries would also be within the area recommended suitable. The entire 8 miles of river corridor on the eastern side of the study area would fall under wilderness management and would be available for primitive recreational activities. The acquisitions would also add 1.5 miles of Ankle Creek which would enhance the primitive recreational opportunities in the eastern portion of the WSA.

The acquisition of private land adjacent to the boundary would more solidly block the "L" shaped extension on the east with the main body of the study area. In addition to alleviating a management problem caused by an area almost completely surrounded by private lands, this alternative would include the higher elevation lands which occur along the eastern side of the WSA.

Energy and Mineral Development Actions

The enhanced wilderness alternative would withdraw 33,130 acres of public land from all forms of appropriation under the mining and mineral leasing laws, plus an additional 1,705 acres of mineral estate and 4,420 acres of private lands, provided proposed acquisition is successful. In this alternative, approximately 2,720 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships.

Diatomite is given a moderate potential for occurrence which is supported by quantitatively minimal, but direct, evidence. However, there are no known deposits of sufficiently large ore bodies that would merit development, and a producing diatomite mine in the region, with ample reserves, limits the need for exploration or development of the suspected diatomite deposits within the WSA. Therefore, no exploration or development of diatomite is projected for the WSA.

No exploration or development of energy resources is anticipated, since no such resources have moderate or high potential for occurrence in the WSA.

Wildlife Habitat Management Actions

Habitat within the study area would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

Livestock Management Actions

Livestock grazing use would remain at the current use level of approximately 4,960 AUMs in the portion of the South Steens allotment located within the WSA. The season of use would remain from April 15 to October 31.

Vehicle use for livestock management on 28 miles of ways would be precluded. Management of livestock and maintenance of 2 miles of fence, 15 reservoirs and a corral would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years to maintain the existing 15 reservoirs.

Recreation Management Actions

Use of motorized vehicles would be precluded within the study area on 41,975 acres, including 28 miles of ways. Vehicle use in over half the WSA is limited to designated existing roads and ways under the off-highway vehicle designation associated with the Steens Mountain Recreation Lands. The current overall recreation use level in the WSA is approximately 3,000 visitor days per year.

No Wilderness/No Action (Proposed Action)

The no wilderness/no action alternative would recommend the entire WSA nonsuitable as wilderness. It represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

Under the no wilderness/no action alternative, the entire 36,275 acres of public land within the WSA would remain open to mineral exploration and development. The mineral withdrawal on approximately 1,280 acres, as described in Section 1, under Interrelationships, for the Donner und Blitzen River Wild and Scenic River designation would continue to apply.

Diatomite is given a moderate potential rating for occurrence which is supported by quantitatively minimal, but direct, evidence. However, there is a producing diatomite mine in the region with ample reserves, which limits the need for exploration or development of the suspected diatomite deposits within the WSA.

This locally available resource, combined with the lack of known deposits of diatomite of sufficient size to merit development, leads to the projection that no exploration or development of diatomite would occur in the WSA. Also, a lack of energy resources having moderate or high potential for occurrence in the WSA results in no projected exploration or development of energy resources.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals. The primary manner in which habitat is managed to support existing populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

Livestock Management Actions

Livestock grazing use would remain at the current use level of approximately 4,960 AUMs within the portion of the South Steens allotment located within the WSA. The season of use would remain from April 15 to October 31.

Eleven miles of division fence would be constructed in the WSA to facilitate a three pasture rest-rotation system in the South Steens allotment. The fencing would be in two parts of the WSA. One section would be 4 miles long and the second section would be 7 miles long. Portions of the WSA would be in all three new pastures and would receive the prescribed grazing treatments of use during the growing season, followed by rest and deferment in subsequent years. No increased grazing use is anticipated.

Vehicle use for livestock management and maintenance of 2 miles of existing fence, 15 reservoirs and a corral would continue on 28 miles of ways. The ways are used approximately 10 times per year to check livestock, maintain facilities and spread salt; and five times per year to utilize the corral.

Recreation Management Actions

Use of motorized vehicles would continue on the 28 miles of existing ways, and cross-country travel in the southern portion of the WSA. Vehicle use in over half of the WSA is limited to existing roads and ways under the off-highway vehicle designation associated with the Steens Mountain Recreation Lands. The current level of overall recreation use is approximately 3,000 visitor days per year.

Summary

Table 1 summarizes the projected management actions under each alternative. Table 2 summarizes the environmental consequences of each alternative.

3. Affected Environment

This section discusses only those activities or resources which influence the character of the study area or that may be affected by the alternatives.

Wilderness Values

Naturalness

The South Fork of the Donner und Blitzen WSA is in a sufficiently natural condition to meet the criteria for WSA classification. The study area contains 30 unnatural features, which are 15 reservoirs, 11 vehicle ways totaling 28 miles, 1 corral, 2 fences totaling 2 miles and an old abandoned habitation.

These developments influence approximately two percent of the WSA.

Eight of the reservoirs are located along the western boundary. The other seven are scattered through the remainder of the WSA. The reservoir with the greatest influence is Long Reservoir which is located in a broad, shallow drainage on the western side of the study area. The other reservoirs are screened by either topography or vegetation.

The vehicle ways in the area are also generally screened by topography and vegetation. The ways that run through small valleys are generally screened by juniper trees, while others cross through relatively flat terrain which substantially decreases their overall visibility.

The abandoned homestead known as the Weaver Place influences approximately 500 acres of the WSA. The fences and wood pole corral have an extremely small influence on the area's naturalness. The fences are screened by vegetation and topography. Although the corral is in a clearing, nearby vegetation screens it from a distance.

The influence of outside sights and sounds on the area is insignificant. Most of the outside developments which can be seen from within the area are boundary roads. Nearly all of these roads can be seen from short distances within the study area, but they do not detract from the natural appearance of the WSA. There are four reservoirs outside the WSA which also have minor effects on the naturalness of the WSA.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

Opportunities for solitude in the South Fork WSA are outstanding. These opportunities are enhanced by the area's large size and diverse topography. Numerous shallow drainages in the western portion of the study area provide opportunities for a visitor to find seclusion. The deeper canyons of the South Fork of the Donner und Blitzen River and its tributaries also contribute to solitude.

Vegetative screening, provided by juniper trees, also enhances opportunities for solitude. Although some aspen and riparian species also occur in the area, they are not a major factor in enhancing solitude.

Opportunities for primitive and unconfined types of recreation in this WSA are outstanding. These activities include day hiking, backpacking, camping, fishing and horseback riding. The primary attraction of the area is the South Fork of the Donner und Blitzen River. The river and its tributaries provide many different routes for hikes of varying degrees of difficulty. The streams and riparian vegetation provide pleasant surroundings in which to hike.

The eastern portion of the area contains juniper and topographic screening which would enhance a backpacking or camping experience. Although it may require purification, water is available throughout the WSA, as are adequate camping spots.

Horseback riding, like backpacking, would be of high quality. Most of the terrain in the study area is relatively accessible by horses. However, there may be some difficulty in gaining access into the South Fork canyon.

Game species which can be hunted within the area include mule deer, antelope, elk and upland game birds. The southwestern portion of the WSA offers good opportunities for hunting antelope, while the eastern and southeastern area offer good deer hunting.

Special Features

A sage grouse strutting ground is located in the northwestern portion of the WSA. This is a site where the sage grouse conduct an extensive courtship dance prior to mating. The same area is often used year after year, and the birds usually nest within a 2-mile radius of the grounds. These birds are listed as a candidate species for Federal listing as threatened or endangered in Oregon.

The WSA contains redband trout, a native fish with limited range, and also a candidate for the Federal list (see Map 2).

The candidate plant species, *Eriogonum cusickii,* which was presented as a special feature in the Draft EIS, was discovered not to be located within the WSA after additional inventory and mapping work.

Diversity in the National Wilderness Preservation System (NWPS)

According to the Bailey-Kuchler system of classifying ecosystems, the South Fork of the Donner und Blitzen

River WSA is located in the Intermountain Sagebrush Province and its potential natural vegetation is sagebrush steppe communities.

The Basin and Range section of the Oregon Natural Heritage Plan identifies six plant communities which occur in this WSA: western juniper/big sagebrush/Idaho fescue, western juniper/low sagebrush/Sandberg's bluegrass, western juniper/big sagebrush/bluebunch wheatgrass, big sagebrush/Idaho fescue, low sagebrush/Idaho fescue and low sagebrush/Sandberg's bluegrass.

The WSA is within five hours' driving time of one standard metropolitan statistical area with a population over 100,000: Boise, Idaho.

Energy and Mineral Development

The geology, energy and mineral resources of the South Fork of the Donner und Blitzen River WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records and correlating rock units in the WSA with similar environments in other areas that are known to contain mineral deposits. Technical details of the evaluation findings are in a report of the assessment of mineral resources, "Catlow Rim Geologic Resource Area, Harney County, Oregon," prepared by TERRADATA (a BLM contractor) and in a BLM report on the assessment of mineral resources in the South Harney Geologic Resource Area.

The WSA is within the Catlow Rim geologic resource area which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level). A description of the rating system is provided in the Statewide EIS volume.

Table 3 shows the energy and mineral classifications in the WSA. Map 4 shows where mineral resources have moderate or high potential for occurrence in the WSA.

The surface rocks are composed mainly of Steens basalt, which consists of numerous thin flows of olivine basalt with a cumulative thickness of several thousand feet and rare interlayers of tuff. Locally, the area is overlain with semi-consolidated lacustrine (lake) tuffaceous sediments and ash flow tuffs.

Energy Resources

The area has a low potential for the occurrence of oil and gas, and there are no indications of geothermal resources in the WSA. There were five oil and gas leases in the WSA as of October 16, 1987, covering 17,525 acres.

Mineral Resources

Diatomite is given a moderate potential for occurrence in portions of the WSA. This rating is based on the presence of tuffaceous lacustrine sediments similar to those in other Tertiary basins in southeastern Oregon which are known to contain diatomite.

Aside from abundant road aggregate sources, there are no known occurrences of mineral deposits within the WSA. There were no mining claims within the WSA as of October 16, 1987.

Vegetation

The major plant communities are low sagebrush/bunchgrass and juniper dominated.

Low sagebrush/bunchgrass is the most extensive community and occurs on the plateaus and flat ridgetops. Large portions of this community have been invaded by juniper. The estimated ecological status of the low sagebrush community is mid- to late seral. Potential natural community will vary with the soil depth. On shallow soils the potential natural community is low sagebrush and Sandberg's bluegrass. Idaho fescue replaces Sandberg's bluegrass on the deeper soils.

Scattered throughout the low sagebrush community are small juniper-covered rock outcrops. The ecological status is estimated to be mid- to late seral and the probable potential natural community is juniper and bluebunch wheatgrass.

Another community which occurs in conjunction with the low sagebrush community is a big sagebrush/Idaho fescue community. This community has also been heavily invaded by juniper in some places. The estimated ecological status is mid-seral and the major potential natural species are Idaho fescue and big sagebrush.

The other major vegetative community is dominated by western juniper and big sagebrush. This community occurs on the slopes of the canyons. The estimated ecological status of these slopes is mid-seral.

Potential natural community is bluebunch wheatgrass and big sagebrush on the south slopes and Idaho Fescue and big sagebrush on the north slopes. Much of the juniper in the canyons is very old and may be considered part of the potential natural community.

Two other small but very distinct and important communities located in the eastern part of the WSA are mountain big sagebrush/grass and the riparian zone. The estimated ecological status for each community is mid-seral. The probable potential natural community for the mountain big sagebrush/grass community is mountain brome, western needlegrass, bluegrass and mountain big sagebrush.

Riparian areas exist primarily along the South Fork of the Donner und Blitzen River and its major tributaries — Ankle Creek, Indian Creek and Deep Creek. The major riparian species are willow, dogwood, alder, chokecherry and aspen. The ecological status of the riparian zone varies from early to late seral. The condition of the riparian zone on public land is 39 percent poor, 24 percent fair and 37 percent good.

There are no known threatened or endangered plant species within the WSA. In the Draft EIS, *Eriogonum cusickii* was listed as a special feature; however, after additional inventory and mapping work, the plant was discovered to not be located within this WSA and the discussion was subsequently dropped from the final EIS.

Livestock forage species are adequate throughout the South Steens allotment and within the WSA; however distribution of livestock is poor. There are localized areas of heavy use in some riparian areas and around water sources, while there are areas of little or no use on the steeper slopes. The current overall level of livestock use of key forage species is estimated to be 50 percent.

Wildlife

The WSA provides habitat for wildlife species common to the mosaic of low sagebrush, western juniper, big sagebrush and riparian habitat types on Steens Mountain. Aspen groves provide a limited amount of habitat for those wildlife species utilizing trees for nesting, foraging and roosting.

Most of the study area is relatively open and provides good deer and antelope summer range. Most of the deer summer range occurs east of the Blitzen River. Elk occasionally use the area from spring through fall. Raptors commonly using the area during the summer include red-tailed hawks, golden eagles, prairie falcons, marsh hawks and American kestrels. Occasional raptor nests have been located within the WSA. Other nongame species found in the study area include black-tailed jackrabbit, mountain cottontail, Brewer's sparrow, western meadowlark, sage thrasher and common flicker.

Chukars may be found in the WSA in the summer, but their populations are not abundant. Sage grouse use the sagebrush-covered rangeland. These birds are listed as a candidate for Federal listing as threatened or endangered.

Riparian habitat is found along 14 miles of streams on public land in the WSA. This includes the river, the three larger creeks, and several intermittent streams. Fisheries habitat quality is rated 46 percent in poor condition and 54 percent in fair condition. Heavy sediment loads coming from headwater streams have degraded trout habitat significantly. Also, lack of streambank shade results in high summer water temperatures, reducing fish habitat quality. Some species of wildlife common to riparian habitat include rock wrens, Brewer's sparrow, yellow-rumped warbler, Cassin's finch and beaver. Redband trout, also a candidate species for Federal listing as threatened or endangered, are found in 14 miles of stream of which 6 miles are the South Fork of the Donner und Blitzen River.

Watershed

The South Fork WSA contains about 14 miles of perennial streams on public land, composed primarily of South Fork Donner und Blitzen River, Ankle Creek, Deep Creek and Big Indian Creek. Portions of the upper South Fork Blitzen River have some active bank erosion problems and all of the perennial streams have high fecal coliform counts during the spring, summer and fall.

Livestock Grazing

The WSA is entirely within the South Steens grazing allotment. Currently, all public lands in the WSA are permitted for livestock grazing. Table 4 summarizes existing livestock use in AUMs. The primary grazing season is from April 15 to October 31.

Existing livestock developments in the WSA include 15 reservoirs, a corral and 2 miles of fence.

Three livestock operators use motorized vehicles within the WSA, amounting to approximately 15 trips per year, for fence, corral and reservoir inspection and maintenance, to check on livestock and to spread salt. Horses are also used to manage and gather livestock in that area.

Recreation Use

Recreation use in the South Fork WSA is primarily oriented toward hunting and fishing. Mule deer, antelope, elk and upland game birds are the most commonly hunted game species.

Vehicle use in over half of the WSA is limited to designated existing roads and ways under the off-highway vehicle designation associated with the Steens Mountain Recreation Lands.

Hunting within this WSA is considered good. The study area is within deer, elk and antelope summer ranges so the animals are present during their respective hunting seasons. Antelope hunting is especially good within the southwestern portion of the area. Hunter use for antelope in this WSA is moderate. Deer hunting is considered good for the eastern portions of the WSA including the "L" shaped parcel in the southeast. Deer hunting use within the study area is high. Elk hunting is fair throughout the WSA.

Upland game birds such as chukar are also present within the study area, but hunting for these birds is considered poor. The area receives low use for upland game hunting.

Fishing in the portion of the Donner und Blitzen River within the WSA is considered excellent by ODFW. The chance to catch redband trout attracts many anglers to this portion of the river and its tributaries. Fishing use on the public lands within this study area is high, with the South Fork accounting for the majority of the fishing use, while Indian Creek has less use and Deep Creek the least.

Hunters and anglers commonly use motorized vehicles to gain access to the WSA. However, a good portion of the South Fork is not accessible by vehicle, so most anglers must hike to gain access for their sport.

The study area receives moderate primitive recreation use associated with day hiking, backpacking, sightseeing or wildlife viewing.

Overall recreation use amounts to approximately 3,000 visitor days per year. Recreational use is currently increasing by approximately 2 percent per year.

Local Personal Income

Livestock use at the current level of 4,960 AUMs and recreation use totaling 3,000 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $59,520 for livestock grazing and $36,000 related to recreation use of the WSA, for an overall total of $95,520. The Statewide EIS volume discusses the term local personal income and how income figures have been derived.

4. Environmental Consequences

This section discusses the environmental consequences of implementing each of the alternatives. Resources and activities not significantly affected by any of the alternatives are not discussed. The Statewide volume also discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness: 37,555 acres
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

All of the WSA would be designated wilderness, and wilderness values within the entire 37,555 acres would be protected by legislative mandate. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. Special features, including a sage grouse strutting ground and native redband trout habitat, would be protected.

Naturalness

The naturalness of the WSA's steep-walled river canyon and rolling plateau area would be slightly enhanced by the closure of 28 miles of ways, and the elimination of approximately 500 visitor days per year. The closure of ways and prohibition of off-highway vehicle use would improve the overall naturalness of the area by allowing the ways to naturally revegetate to an eventual unbroken sagebrush, grass and juniper landscape.

The continued use of vehicles on ways for periodic maintenance of 15 existing reservoirs would affect naturalness to a degree. This infrequent use would not prevent the ways from revegetating.

Solitude

Opportunities for solitude provided by the river and creek canyons and juniper patches would improve slightly with the closure of 28 miles of ways and elimination of 500 visitor days per year.

The periodic maintenance of the existing 15 reservoirs, requiring the use of heavy equipment approximately once every 10 years for each facility, would cause a short-term, localized impairment of solitude due to the intrusion of vehicles, heavy equipment and associated human activity.

Primitive and Unconfined Recreation

The opportunities for participating in primitive recreation (day hiking, backpacking, camping, horseback riding, fishing, hunting and photography) within the study area would be slightly improved under this alternative because of the overall reduction in vehicular use. Periodic maintenance of existing reservoirs would cause disturbance to those persons participating in primitive recreation activities in the vicinity of the developments. The quality of hunting would improve with the closure and natural revegetation of ways. A more natural, primitive and wild setting would be provided.

Special Features

The potential for impacts to animal communities and species of special interest by incidental ORV use would be reduced by the elimination of vehicle use within the WSA. These impacts include minor seasonal disturbance to sage grouse, deer and antelope.

Conclusion: Wilderness designation of the entire 37,555 acres in the South Fork Donner und Blitzen WSA would result in the protection of existing wilderness values and probable enhancement of these values.

Impacts on Energy and Mineral Development

A total of 34,570 acres of land designated wilderness under this alternative would be withdrawn from mineral exploration and development. In this alternative, approximately 1,280 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships. The 1,320 acres of private land and 1,705 acres of split-estate lands would remain open to mineral exploration and development.

Energy Development

No energy exploration and development is projected in the WSA due to the lack of moderate or high potential for occurrence of these resources in the area.

Conclusion: No impact to energy development is expected.

Mineral Development

Within the area designated wilderness, no exploration or mineral development has been projected. Although the 1,705-acres of split-estate lands would be open to mineral exploration and development, no such activity is projected for diatomite, which has a moderate potential for occurrence, due to a lack of known deposits in the WSA and the existence of a producing mine in the region with ample reserves.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Wilderness designation would not introduce any significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the vegetative section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid-seral stage overall. Livestock utilization of key forage species would remain at 50 percent.

The 28 miles of ways, once closed to vehicle use, would naturally revegetate with annual forbs and grasses within approximately two growing seasons. Sagebrush would become established on these ways within five years.

Riparian areas would continue to be heavily grazed due to poor control of livestock distribution and their condition would continue to decline.

Conclusion: The 28 miles of ways (totaling 28 acres) would naturally revegetate. Riparian vegetation in areas of heavy livestock use would continue to decline. Overall vegetation would remain unchanged.

Impacts on Wildlife

Adequate wildlife forage would be ensured in the preparation of livestock allotment management plans to meet ODFW management objectives for deer and elk. ODFW has not set management objectives for antelope or elk.

Wildlife habitat would be preserved in areas designated wilderness; however, the South Fork of the Donner und Blitzen River and its tributaries would continue to be subject to heavy livestock pressure. The resulting erosion, lack of vegetation and overall decline in water quality would continue to cause the riparian and redband trout habitat to deteriorate over 14 miles.

The closure of 28 miles of ways would have little impact on most nongame wildlife species. Deer would be most affected due to decreased disturbance during the hunting season.

Conclusion: Wildlife habitat and populations would be maintained on 37,555 acres designated wilderness. Fourteen miles of redband trout habitat would continue to decline.

Impacts on Watershed

Under the all wilderness alternative, livestock grazing patterns would continue to place pressure on 14 miles of the riparian areas. As a result, erosion problems would continue, causing high levels of turbidity. High fecal coliform levels would continue to be present in the streams during the spring, summer and fall months.

Conclusion: Erosion, turbidity and overall poor water quality would continue on 14 miles of stream and eventually decline further.

Impacts on Livestock Grazing

Livestock grazing use would remain at the current use level of approximately 4,960 AUMs within the portion of the South Steens allotment located within the WSA. The season of use would remain from April 15 to October 31.

Vehicle use for livestock management and facility inspection and maintenance on the 28 miles of ways would be precluded. This action would result in some inconvenience and a slight additional expense to the three livestock operators. Annual inspection and maintenance of 2 miles of existing fence would be done on foot or by the use of riding and pack animals. Heavy equipment would be used approximately once every 10 years to maintain the 15 existing reservoirs.

Conclusion: Livestock use would remain at 4,906 AUMs. Vehicle use on 28 miles of ways would be precluded, causing some inconvenience and a slight increase in cost to livestock operators.

Impacts on Recreation Use

The entire 37,555 acres of the WSA would be closed to motorized recreation vehicle use, including 28 miles of ways. This would reduce recreation use in the WSA by approximately 500 visitor days per year, mainly affecting seasonal travel by vehicle for hunting deer, elk and antelope. Displacement of this use into nearby areas where vehicle use is allowed is expected.

With the exception of fishing activities, which are not as dependent on vehicles for access, existing use of the area for primitive recreation is moderate. Primitive recreation would increase (approximately 500 visitor days per year) both from hunters who do not use vehicles and from visitors seeking primitive and unconfined types of recreation (backpacking, sightseeing, etc.). Any increase would not be sufficient to offset the reduction in vehicle-oriented recreation. Fishing within the WSA would remain the same because most anglers walk to their destination. Projected use patterns indicate that the current level of 3,000 visitor days per year would decrease over time, to 2,500 visitor days per year.

Conclusion: Recreation use would decrease from the current level of 3,000 visitor days per year to approximately 2,500 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 4,960 AUMs. Overall recreation use would decrease by 500 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $6,000 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $6,000.

Enhanced Wilderness

Recommended suitable for wilderness: 41,975 acres
(assuming acquisition of 4,420 acres of private land)
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

The enhanced wilderness alternative would add 41,975 acres to the NWPS, with acquisition of 4,420 acres of private land and the mineral estate of 1,705 acres of split-estate lands. The effects of this alternative, including closure of 28 miles of ways, would be similar to those described under the all wilderness alternative. However, acquisition of the private lands and mineral estate of split-estate lands would prevent future development of these lands. This alternative would improve the wilderness qualities of the area and the wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. The area's special features, including sage grouse and redband trout would be preserved, although redband trout habitat is in a deteriorating condition.

Naturalness

This alternative would enhance the overall naturalness of the WSA slightly more than the all wilderness alternative because of the acquisition of the 1,705 acres of mineral estate of split-estate lands and 4,420 acres of private lands, within and adjacent to the WSA. This action would eliminate any possibility of development and the need for access to these scattered parcels.

The closure of 28 miles of ways and prohibition of off-highway vehicle use would improve the overall naturalness of the WSA by allowing the ways to revegetate to an eventual unbroken sagebrush, grass and juniper landscape. This would eliminate the unnatural influence of the ways on approximately 3,976 acres.

Some of the ways would continue to receive intermittent use for the purpose of maintenance of existing range developments (15 reservoirs) which require use of heavy equipment approximately once every 10 years. However, this use would not prevent the ways from revegetating.

Solitude

Opportunities for solitude would increase slightly with the elimination of motor vehicle use on 28 miles of ways and 500 visitor use days; however, the continued use of some of these ways for access to, and maintenance of, existing range improvements (15 reservoirs) means that vehicle intrusions would not be eliminated completely from the study area.

The periodic maintenance of the 15 reservoirs (maintained once every 10 years) which requires use of heavy equipment, would cause a short-term localized disturbance due to mechanical intrusions and associated human activity.

Acquisition of the mineral estate and private lands within the WSA would eliminate the possibility of development and the need for access to these parcels. The unbroken landownership pattern resulting from these land acquisitions would further enhance solitude by allowing visitors to utilize a larger block of land, with no interruptions from accessing private land owners and vehicles.

Primitive and Unconfined Recreation

The opportunity to participate in a variety of primitive recreation activities (day hiking, backpacking, horseback riding, fishing, hunting, photography and sightseeing) would be preserved or improved under this alternative. An increase in primitive and unconfined types of recreation would be approximately 500 visitor days per year. The elimination of vehicle use on 28 miles of ways, and the acquisition of mineral estate and private lands, further enhances the qualities of primitive recreation activities beyond that of the all wilderness alternative. However, very limited vehicle use would occur within the WSA on an intermittent basis for the purpose of maintenance of the existing 15 reservoirs. These reservoirs require use of heavy equipment approximately once every 10 years. This periodic maintenance would cause a short-term, localized disturbance to those persons participating in primitive recreation activities.

Shifts in the types of hunters utilizing the WSA, from vehicle-oriented to foot or horseback, would occur. Fishing in the area would remain at current use levels because most anglers walk to their destination.

Special Features

The potential for impacts to animal communities of special interest would be reduced by the elimination of the majority of vehicle use within the WSA. No other projected actions or developments are expected to occur in the immediate vicinity of these species' habitats.

The special features of this WSA, including a known sage grouse strutting ground with accompanying nesting habitat and redband trout, would receive protection from inadvertent ORV disturbance.

Conclusion: Wilderness designation under this alternative would result in the protection of existing wilderness values and probable enhancement of these values on 41,975 acres.

Impacts on Energy and Mineral Development

Under the enhanced wilderness alternative, 33,130 acres plus an additional 6,125 acres (if the private land and mineral estate is acquired) would be withdrawn from mineral entry. In this alternative, approximately 2,720 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships.

Energy Development

No energy exploration and development is projected in the WSA due to the low probability of these resources in the area.

Conclusion: No impact to energy development is expected.

Mineral Development

Under the enhanced wilderness alternative, no exploration or mineral development has been projected. No such activity is projected for diatomite, which has a moderate potential for occurrence, due to a lack of known deposits in the WSA and the existence of a producing mine in the region with ample reserves.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Wilderness designation would not introduce any significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the vegetative section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid-seral stage overall. Livestock utilization of key forage species would be 50 percent.

The 28 miles of ways, once closed to vehicle use, would naturally revegetate with annual forbs and grasses within two growing seasons. Sagebrush would become established on these ways after five years.

Riparian areas would continue to be heavily grazed due to poor control of livestock distribution and would continue to decline.

Conclusion: The 28 miles of ways (totaling 28 acres) would naturally revegetate. Riparian areas would continue to deteriorate. Overall vegetation would remain basically the same.

Impacts on Wildlife

Adequate wildlife forage would be ensured in the preparation and implementation of livestock allotment management plans to meet ODFW management objectives for deer and elk. ODFW has not set management objectives for antelope or elk.

Wildlife habitat would be preserved in areas designated wilderness; however, the South Fork of the Donner und Blitzen River and its tributaries would continue to be subject to heavy livestock pressure. The resulting erosion, lack of vegetation and the overall decline in water quality would continue to degrade the riparian areas and redband trout habitat would decline.

The closure of 28 miles of ways would have little impact on most nongame wildlife species. Deer would be most affected due to decreased disturbance during the hunting season.

Acquisition of the 4,420 acres of private land would add important fisheries and riparian habitat along 2.3 miles of the South Fork of the Donner und Blitzen River, 2.3 miles of Ankle Creek and 1.9 miles of Mud Creek. All of this is summer range of high value to deer, sage grouse and many nongame species. The interspersion of water, cover and forage is good. An estimated 780 acres, or 17 percent of the 4,420 acres, was burned by wildfire in 1981. This burned area has early seral stage vegetation of forbs and grasses.

As plant succession advances toward a mid-seral plant community of big sagebrush with a herbaceous understory, the area will become more valuable to deer and sage grouse. Big sagebrush is used for cover and forage by these two wildlife species.

Conclusion: Wildlife habitat and populations would be maintained on 41,975 acres designated wilderness. Fourteen miles of redband trout habitat would continue to deteriorate.

Impacts on Watershed

Under this alternative, acquisition of private lands would add 10 miles of perennial streams to the WSA. Those streams, which also include Mud Creek in addition to the streams presently located in the WSA, are in the same condition as those described in the Affected Environment section, with respect to bank stability and water quality.

Since the proposed range improvement would be foregone under this alternative, the grazing patterns of use would remain the same as at present. Erosion and turbidity problems would continue due to livestock pressure being maintained in riparian areas. High levels of fecal coliform would continue to be present in the perennial streams during the spring, summer and fall months.

Conclusion: Soil erosion, turbidity and overall poor water quality would continue in its present condition and would eventually worsen on 24 miles of stream.

Impacts on Livestock Grazing

Livestock grazing use would remain at the current use level of approximately 4,960 AUMs within the portion of the South Steens allotment located within the WSA. The season of use would remain from April 15 to October 31.

Vehicle use for livestock management and facility inspection and maintenance on 28 miles of ways would be precluded. This would result in some inconvenience and a slight additional expense to the three livestock operators. Annual inspection and maintenance of 2 miles of existing fence would be done on foot or by use of riding and pack animals. Heavy equipment may be use once approximately every 10 years to maintain the existing 15 reservoirs.

Conclusion: Livestock use would remain at 4,960 AUMs. Vehicle use on 28 miles of ways would be precluded, with slight additional expense and inconvenience to livestock operators.

Impacts on Recreation Use

The enhanced wilderness alternative would eliminate vehicle-oriented recreation from the area, mostly affecting hunting for deer, elk and antelope.
The reduction in visitor days from vehicle-oriented hunting could be partially offset by an increase in use by hunters who park outside the WSA and walk to their hunting area or who use horses or pack animals. Fishing use within the WSA would remain the same because most anglers walk to their destination.
Any increase in primitive and unconfined types of recreation would not be sufficient to offset the reduction in vehicle-oriented recreation. Overall visitor use would decrease from 3,000 visitor days per year to approximately 2,500 visitor days per year.

Conclusion: Recreation use would decrease from the current level of 3,000 visitor days per year to approximately 2,500 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 4,960 AUMs. Overall recreation use would decrease by 500 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $6,000 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $6,000.

No Wilderness/No Action (Proposed Action)

Recommended suitable for wilderness: 0 acres
Recommended nonsuitable for wilderness: 37,555

Impacts on Wilderness Values

Under the no wilderness alternative, the entire 37,555 acres of public land would not be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude and primitive and unconfined recreation, as well as the area's special features, including a sage grouse strutting ground and redband trout habitat, would be subject to the effects of projected management actions. These actions include range development projects and increasing vehicle use for recreational pursuits.

Naturalness

Construction of 11 miles of a livestock fencing project would directly impair naturalness on 11 acres of surface disturbance. The fence would indirectly influence 1,100 acres of the WSA. This construction activity would cause a short-term, localized disturbance to the area; however, in the future, naturalness would be enhanced due to an increase in riparian vegetation. This would also have a positive effect on riparian wildlife and aquatic habitat.

The projected increase in annual recreation use of approximately 200 visitor days would locally reduce naturalness, particularly in the vicinity of the study area's 28 miles of ways. The continued use of ways by vehicles would prevent revegetation of the ways, and would maintain the possibility of new ways being formed by continued off-highway vehicle use of the area as a whole.

Solitude

Continued vehicle use of 28 miles of existing ways and human and mechanical activity associated with range improvement construction and maintenance would cause repeated, but short-term local impairment of solitude opportunities adjacent to these activities. The increasing use of vehicles for recreational pursuits would impair solitude opportunities in the vicinity of the ways. Solitude opportunities in the river and stream canyons would remain unchanged.

Primitive and Unconfined Recreation

Under this alternative, primitive recreation experiences would be disturbed by development of range projects and increasing use of vehicles for recreational pursuits.

The 11 miles of fence, as an unnatural feature, would influence approximately 1,100 acres within the immediate vicinity.

Vehicle use would continue on the existing 28 miles of ways, as well as any new ways created. Such use would continue to intrude on primitive, nonmotorized recreation opportunities in the vicinity of the ways.

Special Features

The sage grouse strutting ground and accompanying nesting sites, plus the redband trout which are identified as a candidate for Federal listing as threatened or endangered, would be subject to changes from development of other resources and accompanying changes in land use patterns. Both species would benefit from a change in the grazing use.

The continued use of vehicles in the study area would maintain the potential for disturbance to the sage grouse habitat. Monitoring and mitigation measures could minimize or eliminate some of the impacts.

The livestock fencing project would improve redband trout habitat by decreasing livestock pressure and subsequent impacts to the riparian zone. This would allow riparian sodgrasses to increase in density and vigor, providing more riparian cover, reducing the amount of siltation.

Conclusion: In the absence of wilderness designation, projected activities would directly impair wilderness values over approximately 11 acres of surface disturbance and indirectly influence 1,100 acres, with further declines from other potential uses over the long term.

Impacts to Energy and Mineral Development

The entire WSA would be open to mineral entry. The mineral withdrawal on approximately 1,280 acres, as described in Section 1, under Interrelationships, for the Wild and Scenic River designation would continue to apply.

Energy Development

No geothermal or oil and gas exploration and development is projected in the WSA due to the lack of indications or low potential for occurrence of these resources in the area.

Conclusion: There would be no impact on energy development in the WSA.

Mineral Development

Within the study area, no exploration and development has been projected. Although the entire WSA is open to mineral exploration and development, no such activity is projected for diatomite, which has a moderate potential for occurrence, due to a lack of known deposits in the WSA and the existence of a producing mine in the region with ample reserves.

Conclusion: There would be no impact on mineral exploration and development in the WSA.

Impacts to Vegetation

The vegetative composition, as described in the vegetation section of the Affected Environment, would not substantially change, nor would the overall ecological status, which is currently in the mid-seral stage. Livestock utilization of key forage species would continue to be 50 percent (moderate) with the implementation of range developments and improved range management.

The implementation of fencing projects would result in improved livestock management by creating three separate pastures, allowing a rest rotation grazing system. The fencing project would reduce livestock utilization of riparian areas and would result in increased density and vigor of sod grasses along streambanks. Riparian shrubs and trees would remain in their current condition.

The 28 miles of ways would remain open to vehicle use and would not revegetate. Increasing vehicle use would increase the possibility of additional ways being created and corresponding vegetative cover being eliminated.

Conclusion: The 28 miles of ways would not revegetate. Riparian vegetation would slightly improve with implemented fencing projects and improved grazing management. Overall vegetation would remain basically unchanged.

Impacts on Wildlife

Adequate wildlife forage would be ensured in the preparation and implementation of livestock allotment management plans to meet ODFW management objectives for deer and elk. ODFW has not set management objectives for antelope or elk.

The proposed division fencing and implementation of a rest-rotation grazing system would allow an increase in the vigor and density of sod grasses growing on streambanks. Once established, the sodgrasses would stabilize streambanks, reduce soil erosion and would decrease sediment in the streams. However, riparian shrubs and trees would not change from their present situation because cattle and wild horses would continue to heavily graze these woody species when they are most susceptible to damage. Cover for many nongame wildlife species would increase due to additional cover on uplands. The condition of meadows would improve due to improved vigor and density of grasses and sedges. Meadows are heavily used by sage grouse and many nongame species for foraging and nesting.

The 28 miles of ways would remain open and, in conjunction with the projected slight increase in overall recreation use, would have a negligible impact on big game species during their respective hunting seasons.

Conclusion: Wildlife habitat and populations would be maintained on 37,555 acres under this alternative. Riparian habitat would only slightly improve.

Impacts on Watershed

Under the no wilderness alternative, establishment of the division fences and implementation of an improved grazing management system would improve riparian vegetation and streambank stability by allowing sodgrasses to increase in density and vigor along streambanks. This would improve overall water quality by allowing for increased streambank stability, reduction of soil erosion and decreased siltation.

Conclusion: Improved grazing management would improve riparian vegetation, allowing stabilization of streambanks and improved water quality.

Impacts on Livestock Grazing

Livestock grazing use would continue at 4,960 AUMs within the portion of the South Steens allotment located within the WSA. The season of use would remain from April 15 to October 31.

Construction of 11 miles of division fence, and implementation of a three-pasture, rest-rotation grazing system would improve livestock grazing distribution and provide for more uniform grazing. This would alleviate stress on overutilized areas. No increase in livestock grazing is anticipated. The prescribed grazing treatments of use during the growing season, rest and deferment would sustain livestock forage in the long term.

Vehicle use for livestock management and facility inspection and maintenance would continue on 28 miles of ways.

Conclusion: Livestock grazing would continue at the current use level of approximately 4,960 AUMs.

Impacts on Recreation Use

Motorized recreation use would continue on the 28 miles of ways. Vehicle use on over half of the WSA is limited to designated existing roads and ways under the off-highway vehicle designation associated with the Steens Mountain Recreation Lands. The quality of primitive recreation activities could moderately decline as a result of the projected increase in vehicle-oriented recreation and projected livestock projects; however, in the riparian areas, primitive recreation activities would be enhanced by the projected improvement in riparian vegetation. Projected use patterns indicate that the current level of 3,000 visitor days per year would increase over time, to 3,200 visitor days per year.

Construction of the livestock fencing projects, which would improve riparian wildlife and aquatic habitat, could enhance the recreation opportunities in the study area.

Vehicle-oriented hunting (deer, elk, antelope and game birds) would continue its present use pattern due to all ways remaining open within the study area.

Conclusion: Recreation use would increase from the current level of 3,000 visitor days per year to approximately 3,200 visitor days per year. Vehicle use in half of the WSA would remain limited to existing roads and ways under the off-highway designation associated with the Steens Mountain Recreation Lands.

Impacts on Local Personal Income

Livestock grazing would remain at 4,960 AUMs. Overall recreation use would increase by 200 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $2,400 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by approximately $2,000.

Unavoidable Adverse Impacts of the Proposed Action

Under the Proposed Action (No Wilderness/No Action), construction of 11 miles of fence would have an unavoidable adverse impact to wilderness values by directly disturbing 11 acres, and visually influencing 1,100 acres. A projected increase in overall annual recreation use of approximately 200 visitor days would impair wilderness values and opportunities for primitive and unconfined recreation in the vicinity of the 28 miles of ways.

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity

Under the Proposed Action, existing short-term uses would continue. Future land use options, including range improvement projects and increased vehicle use, would remain open. Long-term ability of the area to produce wilderness values would be directly lost on 11 acres of the WSA due to the projected livestock fence and on areas subjected to cross-country vehicle use. The projected increase in overall recreation use, primarily in conjunction with big game hunting, would affect wilderness values in the vicinity of the ways and areas of use. The improved range management provided by the division fences would alleviate some of the livestock use of riparian areas and allow for some long-term improvement of overall riparian condition and productivity. The fence would visually influence 1,100 acres.

Irreversible and Irretrievable Commitments of Resources

Under the proposed action of no wilderness, range improvements (11 miles of division fences) would result in an irreversible commitment of wilderness values on 11 acres directly. This would visually influence 1,100 acres.

5. Wilderness Manageability and Rationale for the Proposed Action

Manageability of the Area as Wilderness

The South Fork of the Donner und Blitzen River WSA would be manageable as wilderness under the all wilderness alternative, but such management would be difficult because of the private lands on the east side of the WSA. The private land would cause two problems. First, the wilderness area's boundary would follow legal subdivisions along most of the eastern side, making boundary identification difficult. This problem is compounded by the presence of the "L" shaped extension which is nearly surrounded by unmarked private land.

The second problem is location of the private land. The area's primary recreational attraction likely would be the river corridor, and to a lesser extent, the larger tributaries which enter from the east. About 2.5 miles of the river within this corridor crosses privately-owned land (this includes one inholding and a portion of private land on the boundary). Management of this part of the area would be difficult if the landowner did not want general recreation use to occur on these parcels. Even with signing or fencing, recreational use of the river corridor or the "L" shaped extension would be difficult to manage for recreation purposes under the all wilderness alternative.

Under the enhanced alternative, the area would be manageable as wilderness. There would be no substantial manageability problems if the inholdings and the land between the main body of the WSA and the "L" were acquired. Mineral estate of the split-estate lands would also be subject to acquisition. The perimeter of the area could be adequately signed or fenced.

Rationale for the Selection of the Proposed Action

The no wilderness/no action alternative is the proposed action because of the potential manageability problems associated with the private lands on the eastern side of the study area. The most significant wilderness values in the WSA are located in the eastern portion and the river corridor where the private land is located. The western portion of the study area possesses wilderness values of somewhat lower quality than the eastern portion.

Wilderness designation of the WSA would require the acquisition of substantial amounts of private land. These acquisitions would be essential in order to reduce the potential for management problems. Although the area possesses some wilderness values, particularly along the eastern portion, these values do not offset the option of leaving the area open to the existing vehicle-oriented recreational uses and projected range developments. The overall wilderness values of such significance do not warrant the necessary acquisitions of private land and designation of the area as wilderness. Construction of divisional fencing would allow the application of livestock grazing management designed to improve riparian habitat conditions, thus improving redband trout habitat, a candidate species for Federal listing as threatened or endangered.

6. Summary and Analysis of Public Comments

Following is a summary of public comments specific to this WSA concerning adequacy of the analysis in this appendix and responses to those comments. These comments were received both in writing and oral testimony at public hearings during the comment periods for the 1985 Draft EIS and the 1987 Supplement to the Draft EIS. Comments concerning the BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning statewide issues and analysis are addressed in the Statewide Volume EIS.

Comment: BLM's recreation use data are inadequate tools for decision-making. **Response:** The estimates made by BLM are considered adequate for analysis purposes. These recreation estimates are based on professional judgments utilizing field observations, aircraft over flights and inventory data from planning efforts. Recreation use patterns, which have been established over a period of time, are analyzed according to type of use or activity, number of visitors and location of recreation events within a given area. Recreation trends are then estimated based on past and present visitor use patterns and projections are made. Comparisons of primitive versus other forms of recreation activities have been factored into the estimates, which are shown primarily in Section 4, Environmental Consequences, in each alternative, under "Impacts on Recreation Use."

Comment: Consider an alternative that would combine this WSA with other Steens units. Also, current exchanges could be used to consolidate this area with adjacent WSAs. **Response:** All nearby WSAs are separated from the South Fork of the Donner und Blitzen WSA by roads which would have to be closed to allow for combination, whether or not private lands were acquired. See discussion of alternatives considered, but not analyzed in Chapter 2, Description of the Alternatives.

Table 1. Summary of Proposed Management Under Each Alternative, South Fork of the Donner und Blitzen River WSA (OR-2-85G)

Proposed Management	All Wilderness	Enhanced Wilderness	No Wilderness/ No Action
Acres Designated as Wilderness	37,555	37,555	0
Acres Closed to ORV by Wilderness Designation	37,555	37,555	0
Miles of Ways Closed	28	28	0
Acres of Full Fee Estate Acquired [1]	0	4,420	0
Acres of Mineral Estate Acquired [2]	0	1,705	0
Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation	34,570[3]	33,130[4]	0
Structural Livestock Projects Developed: Fences (miles)	0	0	11

[1] Upon acquisition, these additional lands would be incorporated into the wilderness area, closed to vehicle use, and withdrawn from mineral location and leasing.

[2] Upon acquisition, the mineral estate would be withdrawn from mineral location and leasing.

[3] A total of approximately 1,280 acres in the WSA are already withdrawn from mineral location and leasing through Congressional designation of the area as a Wild and Scenic River.

[4] A total of approximately 2,720 acres in this alternative are already withdrawn from mineral location and leasing through Congressional designation of the area as a Wild and Scenic River.

Table 2. Summary of Environmental Consequences of Alternatives, South Fork of the Donner und Blitzen River WSA (OR-2-85G)

Resource or Activity	All Wilderness	Enhanced Wilderness	No Wilderness/ No Action
Wilderness Values	Wilderness designation of the entire 37,555 acres would result in the protection of existing wilderness values and probable enhancement of these values.	Wilderness designation would result in the protection of existing wilderness values and probable enhancement of these values on 41,975 acres.	In the absence of wilderness designation, projected activities would directly impair wilderness values over approximately 11 acres of surface disturbance and indirectly influence 1,100 acres, with further declines from other potential uses over the long term.
Energy and Mineral Development	No impact to energy or mineral development.	No impact to energy or mineral development is expected.	There would be no impact to energy or mineral development.
Vegetation	The 28 miles of ways would naturally revegetate. Riparian vegetation in areas of heavy livestock use would continue to decline. Overall vegetation would remain unchanged.	The 28 miles of ways would naturally revegetate. Riparian vegetation would continue to deteriorate. Overall vegetation would remain basically the same.	The 28 miles of ways would not revegetate. Riparian vegetation would slightly improve with implemented fencing projects and improved grazing management. Overall vegetation would remain basically unchanged.
Wildlife	Wildlife habitat and populations would be maintained on 37,555 acres designated wilderness. Fourteen miles of redband trout habitat would continue to decline.	Wildlife habitat and populations would be maintained on 41,975 acres designated wilderness. Fourteen miles of redband trout habitat would continue to deteriorate.	Wildlife habitat and populations would be maintained on 37,555 acres under this alternative. Riparian habitat would only slightly improve.
Watershed	Erosion, turbidity and overall poor water quality would continue on 14 miles of stream and eventually decline further.	Soil erosion, turbidity and overall poor water quality would continue in its present condition and eventually worsen on 24 miles of stream.	Improved grazing management would improve riparian vegetation, allowing stabilization of streambanks and improved water quality.
Livestock Grazing	Livestock use would remain at 4,960 AUMs. Vehicle use on 28 miles of ways would be precluded, causing some inconvenience and a slight increase in cost to livestock operators.	Livestock use would remain at 4,960 AUMs. Vehicle use on 28 miles of ways would be precluded, with slight additional expense and inconvenience to livestock operators.	Livestock use would continue at the current level of approximately 4,960 AUMs.
Recreation	Recreation use would decrease the current level of 3,000 visitor days per year to approximately 2,500 visitor days per year.	Recreation use would decrease from the current level of 3,000 visitor days per year to approximately 2,500 visitor days per year.	Recreation use would increase from the current level of 3,000 visitor days per year to approximately 3,200 visitor days per year. Vehicle use in half of the WSA would remain limited to existing roads and ways under the off-highway designation associated with the Steens Mountain Recreation Lands.
Local Personal Income	Annual local personal income would decrease by approximately $6,000.	Annual local personal income would decrease by approximately $6,000.	Annual local personal income would increase by approximately $2,000.

Table 3. Classification of Energy and Mineral Potential, South Fork of the Donner und Blitzen River WSA (OR-2-85G)

Commodity	Area	Level of Potential	Level of Certainty
Metals	Entire WSA	O	B
Geothermal	Entire WSA	O	D
Uranium/Thorium	Entire WSA	O	A
Coal	Entire WSA	O	B
Oil/Gas	Entire WSA	L	A
Tar Sands/Oil Shale	Entire WSA	O	C
Limestone	Entire WSA	O	C
Bentonite	Entire WSA	O	A
Diatomite	See Map 4	M	C
	Rest of WSA	O	B
Zeoloites	Entire WSA	O	A

Legend:

Level of Potential

O - No indication for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Moderate potential for accumulations of energy/mineral resource
H - High potential for accumulations of energy/mineral resource

Level of Certainty

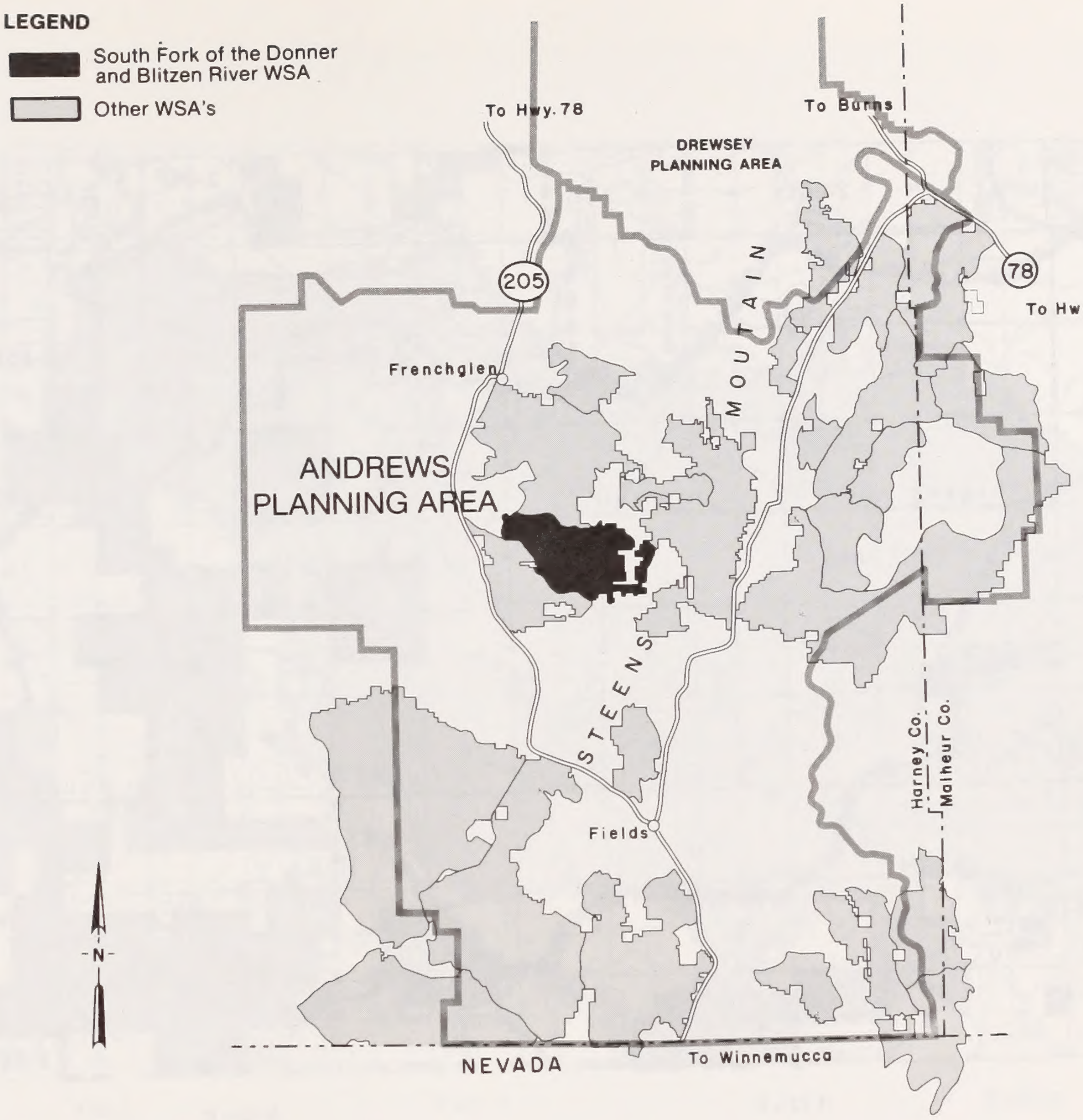
A - Insufficient data or no direct evidence
B - Indirect evidence available
C - Direct evidence but quantitatively minimal
D - Abundant direct and indirect evidence

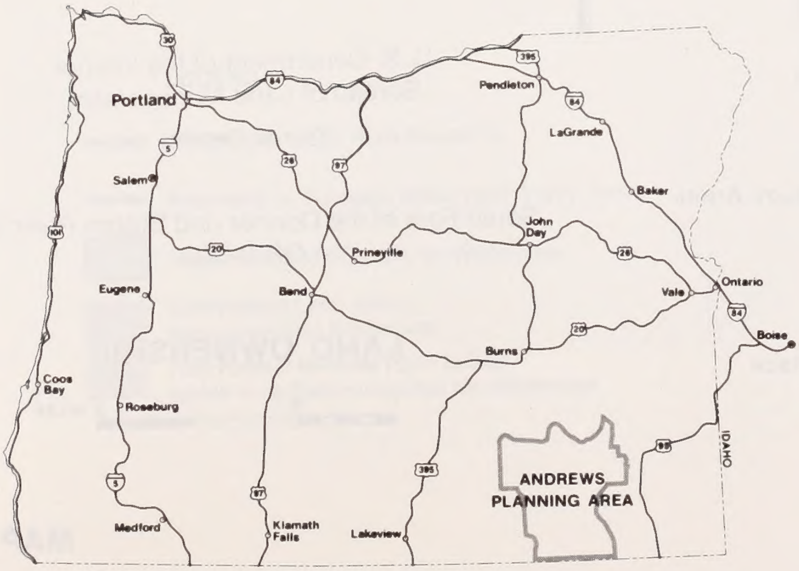
Table 4. Existing Livestock Use, South Fork of the Donner und Blitzen River WSA (OR-2-85G)

Grazing Allotment	Licensed AUMs in Allot.	Period of Use	Percent of Allot. in WSA	Current Estimated Use in WSA (AUMs)
South Steens (No. 6002)	23,681	04/16-10/31	15	4,960

Table 5. Effects of Alternatives on Local Personal Income, South Fork of the Donner und Blitzen River WSA (OR-2-85G) (1981 price levels)

Item	Unit of Measure	All Wilderness	Enhanced Wilderness	No Wilderness/ No Action
CHANGES IN RESOURCE OUTPUTS				
Livestock Grazing	AUMs	No change	No change	No change
Recreation Use	RVD	-500	-500	+200
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES				
Livestock Grazing	$	0	0	0
Recreation Use	$	-6,000	-6,000	+2,400
Total	$	-6,000	-6,000	+2,400





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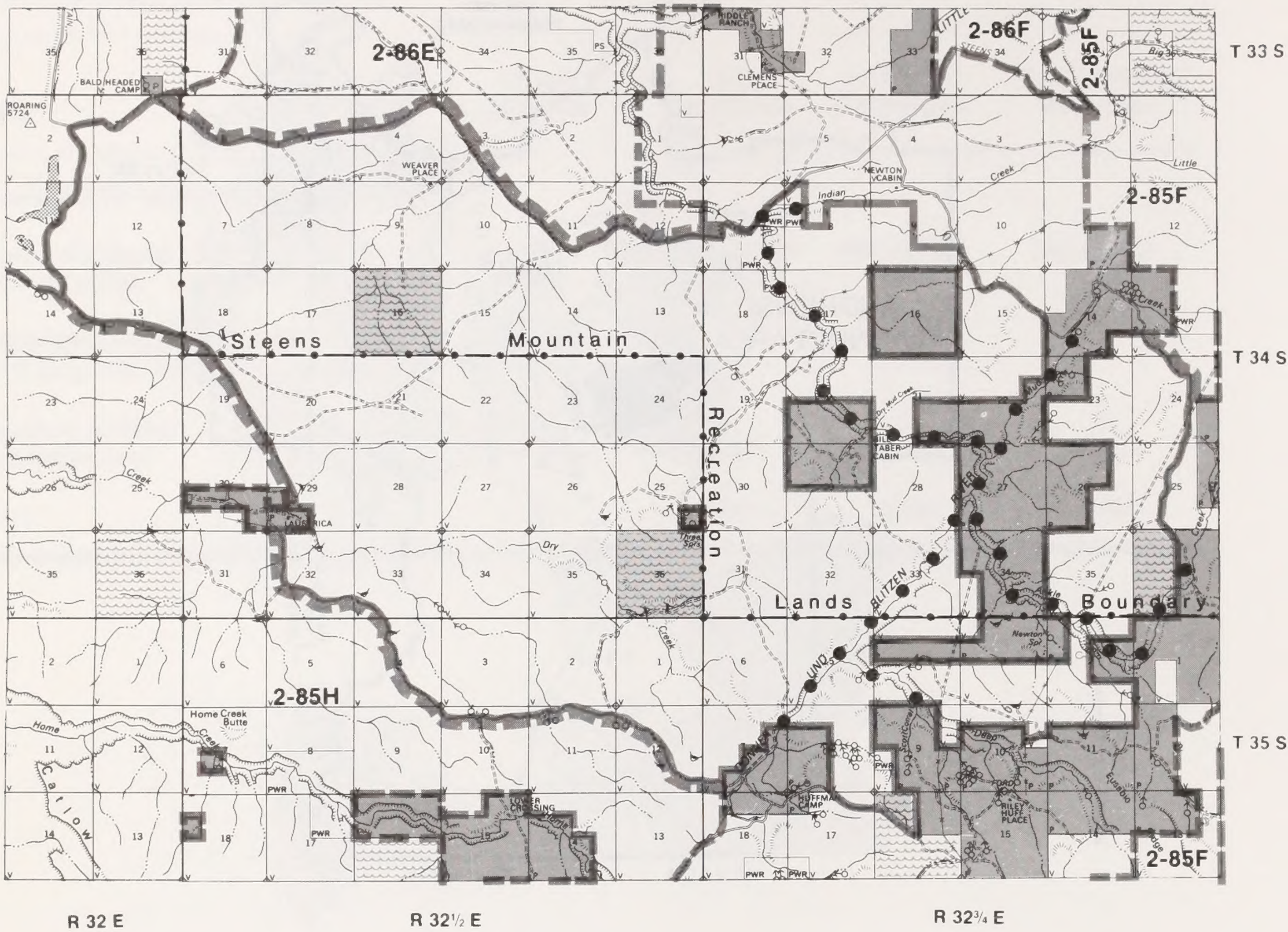
Burns District

South Fork of the Donner und Blitzen River WSA
OR-2-85G

LOCATION MAP

10 0 10 MILES

MAP 1



LEGEND

▨ BLM Land Studied Under Section 202 of FLPMA (Other BLM Land in WSA Studied Under Section 603 of FLPMA)

▬ Wilderness Study Area Boundary

▬ ▬ Boundary of Adjacent Wilderness Study Areas

☐ Bureau of Land Management

■ Private

▤ BLM Surface State or Private Subsurface (Split Estate)

● ● ● Redband Trout Habitat

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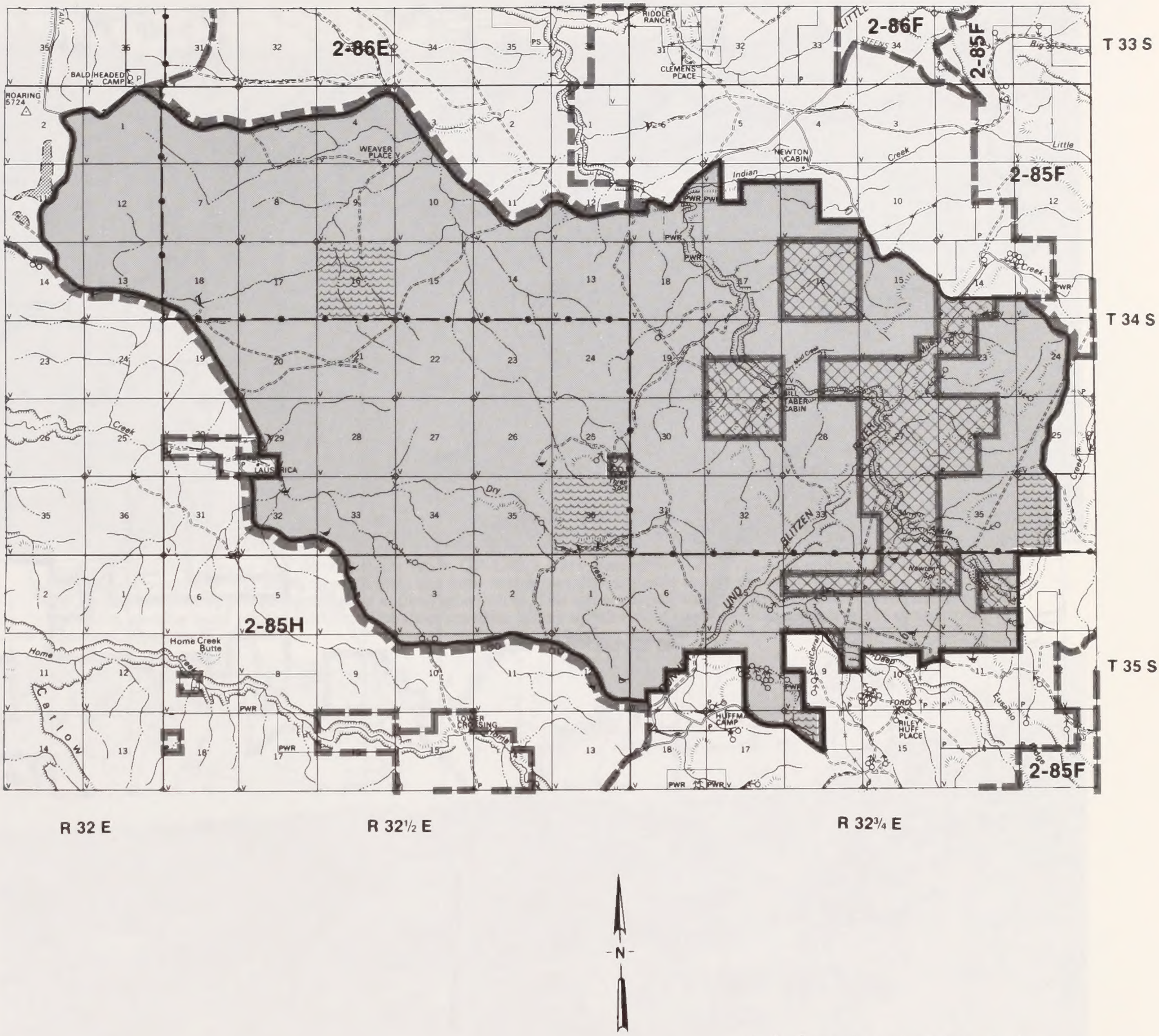
South Fork of the Donner und Blitzen River WSA
OR-2-85G

LAND OWNERSHIP

1 0 1 2 MILES

MAP 2



LEGEND

▬ Wilderness Study Area Boundary

▬ ▬ Boundary of Adjacent Wilderness Study Areas

▭ Recommended Suitable for Wilderness

▨ Non-Federal Land within Recommended Wilderness

▤ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness

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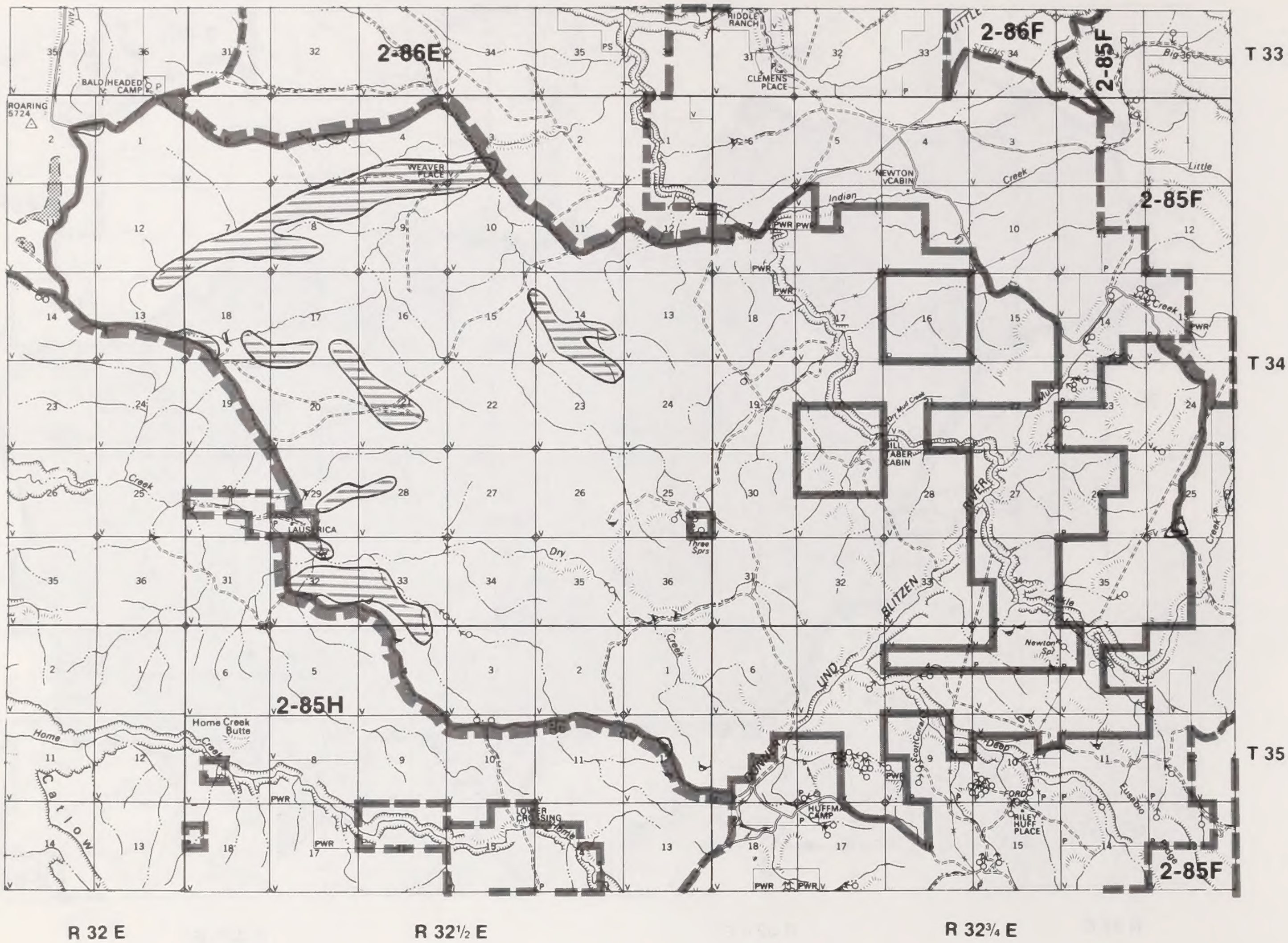
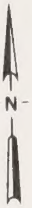
South Fork of the Donner und Blitzen River WSA
OR-2-85G

ENHANCED ALTERNATIVE

1 0 1 2 MILES

MAP 3





▤ Moderate Potential (MC) for Diatomite

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South Fork of the Donner und Blitzen River WSA
OR-2-85G

MODERATE OR HIGH POTENTIAL MINERAL OR ENERGY RESOURCES

MAP 4

South Fork of the Donner und Blitzen River WSA, OR-2-85G. This view shows the river as it winds its way north through the eastern portion of the study area. Within the area recommended suitable under the enhanced and nonsuitable under the proprosed action (no wilderness/no action) alternative. The snowcapped upper elevations of Steens Mountain, to the north, can be seen on the horizon. The river corridor offers outstanding opportunities for a variety of recreational activities. May 1981.

South Fork of the Donner und Blitzen River WSA, OR-2-85G. The east side of the South Fork of the Donner und Blitzen River looking north. Recommended suitable under the enhanced and nonsuitable under the proposed action (no wilderness/no action) alternative. The ridgeline is in the High Steens WSA (OR-2-85F) to the north and east. The dead juniper in the middle ground is the result of a fire which burned the area in 1981. August 1983.

Appendix to the Wilderness Environmental Impact Statement for Oregon

Home Creek Wilderness Study Area (OR-2-85H)

1. Introduction

General Description of the Study Area

The Home Creek Wilderness Study Area (WSA) is located 63 miles south of Burns (13 miles south of Frenchglen) in Harney County, Oregon (see Map 1). The area lies adjacent to the county road which extends south of Oregon State Highway 205. The State Highway ends less than 1 mile north of the WSA.

The study area is roughly triangular in shape and contains 26,590 acres of public land (see Map 2). Included within the study area are privately-owned parcels totaling 120 acres and 1,470 acres of split-estate land. The boundary line of the area is composed primarily of roads and private land. A low standard dirt road forms the northern and eastern portions of the boundary line. Small portions (less than 2 miles) of the western boundary line are formed by a high standard gravel road maintained by Harney County.

The major physical features of the Home Creek WSA are Catlow Rim, the plateau area, and the three drainages of Dry Creek, Home Creek and Threemile Creek.

Along the western side of the WSA is Catlow Rim, a steep and rocky, westerly-facing escarpment which rises 800 to 1,500 feet above Catlow Valley. The very western edge of the WSA contains a portion of the eastern edge of Catlow Valley, where the study area reaches its lowest elevation of 4,580 feet.

From the top of Catlow Rim, the eastern three-quarters of the WSA is a gently rolling plateau. This plateau is on the western side of the Steens Mountain Fault Block. It is on this plateau, in the southern end of the study area, that the areas's highest elevation is reached, 6,461 feet.

The 9-mile length of the Catlow Rim, which is located within the WSA, is deeply cut in three locations. Draining the extreme western slopes of Steens Mountain and emptying into the Catlow Valley are Dry Creek, Home Creek and Threemile Creek. As a result of erosion over centuries, these creeks have carved large, deep canyons through the face of the rim.

Home Creek is the only stream in the WSA which is perennial over its entire length. Home Creek Canyon cuts into the plateau with a depth of 300 to 1,200 feet for over 2.5 miles and is the longest and steepest of the three canyons. With sheer rock walls, the canyon rises 1,200 feet in about 0.25 mile. The remaining 2.5 miles of Home Creek are in a fairly shallow canyon just over 100 feet in depth.

Threemile Creek Canyon is the deepest of the three canyons. At its deepest point, the creek is 1,500 feet below the rim of the canyon. Of the 3 miles of Threemile Creek located in the study area, only the lower 2 miles are perennial.

Dry Creek Canyon is the smallest of the three canyons. It ranges from 300 to 800 feet in depth and does not contain a perennial stream.

The major vegetative communities in the area are dominated by low sagebrush and western juniper. A variety of grasses are also found in the WSA, and riparian vegetation occurs in the drainages of Home Creek and Threemile Creek.

Interrelationships

Adjacent to the eastern boundary of the study area is the South Fork of the Donner und Blitzen WSA (OR-2-85G), separated from the Home Creek WSA by a BLM road and a small amount of private land. The road is maintained on an as-needed basis and used by BLM, private landowners and recreationists for access to the central portion of the Steens Mountain area.

The Oregon Department of Fish and Wildlife (ODFW) has identified the Catlow Rim area between Dry Creek and Threemile Creek as potential yearlong habitat for California bighorn sheep. California bighorn sheep is a candidate species for listing under the Endangered Species Act. ODFW has proposed to release sheep in the area as part of a program to reintroduce bighorns to their former range. This site is one of five identified in the BLM's Burns District as a potential transplant site by ODFW. ODFW's management objective is for a population of 150 bighorns in this area.

The WSA is located within the ODFW Steens Mountain Wildlife Management Unit, which contains 1,916-square-miles of land. The WSA supports an estimated 200 deer and 75 antelope during the summer months. Wintertime populations drop to 100 deer and no antelope. ODFW's management objective is for 11,000 deer within the entire management unit. ODFW has not set management objectives for antelope. ODFW conducts an annual count of a sage grouse strutting ground. The ODFW goal for nongame wildlife is to maintain populations of naturally-occurring species at self-sustaining levels. ODFW conducts summering antelope herd composition counts by low level aerial flights. ODFW annually maintains one wildlife guzzler in the WSA, located near the western boundary line and Dry Creek.

In previous years, ODFW has supplied hatcheries with redband trout (a candidate for Federal listing as threatened or endangered) from Threemile Reservoir, located south of the WSA. The reservoir is fed by Threemile Creek, one of the watersheds located within the WSA. ODFW has a management objective to manage for wild trout in Threemile Creek and Home Creek.

The proposed action for this WSA conforms with ODFW management objectives for game and nongame species.

Most of the WSA is in the South Steens wild horse Herd Management Area (HMA). Management of the HMA will not be significantly affected by any of the alternatives.

Harney County has not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study and EIS planning, scoping and public review process. These issues concern both the effects of wilderness designation on existing and potential land uses in the WSA, as well as the effects of existing and potential land uses or resources on wilderness values. Land uses or resources raised as issues specifically for this WSA include:

- impact on the area's wilderness values,
- impact on potential exploration and development of mineral resources,
- impact on existing vehicle use in the area, particularly for hunting,
- impact on wildlife habitats and populations, including redband trout and bighorn sheep, and
- impact on livestock grazing use levels and management.

No other issues specific to this WSA were raised by BLM or the public.

2. Description of the Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made.

The following alternatives were analyzed:

- all wilderness
- partial wilderness (proposed action)
- no wilderness/no action

An enhanced wilderness alternative is not analyzed for this study area because it would not be significantly different from the all wilderness alternative. Combining Home Creek WSA with the adjacent South

Fork of the Donner und Blitzen WSA by closing the road between them is not considered to be a feasible alternative; the road serves as needed access to private and public land outside the study area in an area with limited access.

All Wilderness

The all wilderness alternative would recommend all 26,590 acres of public land in the study area suitable for wilderness (see Map 2). For purposes of analysis, it is assumed that none of the private land or mineral estate of split-estate lands would be acquired.

Energy and Mineral Development Actions

Wilderness designation would withdraw 25,120 acres of public land within the WSA from all forms of appropriation under the mining and mineral leasing laws. Mineral and energy development could occur on 1,590 acres of private and split-estate lands; however, these parcels are located outside of the areas where diatomite is suspected to occur (see Map 4) and there are no other energy or mineral resources with moderate or high potential for occurrence in the area.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing populations is through establishment of livestock grazing management plan goals to ensure sufficient forage for wildlife. A 1-mile riparian fencing project is proposed for habitat protection along Threemile Creek. Access to maintain the one existing guzzler and the new riparian fence would be on foot.

Livestock Management Actions

Livestock use would remain at the current level of approximately 2,809 AUMs. The season of use would continue to be from April 16 to September 30.

Vehicle use for livestock management on 7 miles of ways would be precluded. Management of livestock and maintenance of 2 miles of fence would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years for each of the 11 existing reservoirs.

Recreation Management Actions

The entire 26,590 acres of public land in this study area would be closed to motorized vehicle use, involving three vehicle ways totaling 7 miles. Current overall recreation use of the WSA amounts to approximately 300 visitor days per year.

Partial Wilderness (Proposed Action)

Under the partial alternative, 22,015 acres of public land would be recommended suitable for wilderness designation and 4,575 acres nonsuitable for wilderness (see Map 3). An attempt would be made to acquire 120 acres of private land and the mineral estate portion of 1,015 acres of split-estate land. These lands could be acquired through purchase or exchange with willing owners. Assuming acquisition of these lands, the total area recommended suitable under this alternative would be 22,135 acres.

The partial alternative retains the area's basic configuration. The entire western boundary would be located at the 4,700-foot elevation level (along the base of Catlow Rim). Approximately 1,000 acres of the WSA west of and below the 4,700-foot contour line would be outside the wilderness area. This would enhance manageability of the area by avoiding the irregular configuration of legal subdivisions on this side of the WSA and making the boundary more identifiable on the ground.

The southeastern boundary would exclude a small portion of the area east of what is referred to as the Lower Crossing Road. Identified in the WSA inventory as a way, this route provides access to surrounding public and private lands; it would become part of the boundary, allowing for its continued use. Approximately 2,880 acres of the WSA would be recommended as nonsuitable for wilderness as a result of this adjustment. The remainder of the southern boundary would be a legal subdivision. As a result, an additional 560 acres would be recommended as nonsuitable for wilderness. This parcel is surrounded by adjacent private land, would not have an identifiable boundary and would be difficult to manage as wilderness.

Energy and Mineral Development Actions

The partial wilderness alternative would close 21,000 acres of public land to all forms of appropriation under mining and mineral leasing laws. Provided acquisition is successful, an additional 1,015 acres of split-estate and 120 acres of private land would also be closed to mineral entry for a total acreage withdrawal of 22,135 acres.

Diatomite is given a moderate potential for occurrence; however, there are no known deposits of sufficiently large ore bodies that would merit development. There is an active diatomite mine in the region which has ample reserves, leading to the projection that no exploration or development of the suspected diatomite deposits would occur on the 4,575 acres recommended nonsuitable for wilderness.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and, in the suitable portion, consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing management plan goals to ensure sufficient forage for wildlife. A 1-mile riparian fencing project is proposed for habitat protection along Threemile Creek. Access to maintain the one existing guzzler and the new riparian fence would be by foot.

Livestock Management Actions

Livestock use would remain at the current level of approximately 2,809 AUMs. The season of use would continue to be from April 16 to September 30.

In the suitable portion of the WSA, vehicle use for livestock management on 5.5 miles of ways would be precluded. Management of livestock and routine maintenance of 2 miles of fence would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years for each of the 11 existing reservoirs.

In the nonsuitable portion, vehicle use for livestock management and maintenance would continue on 1.5 miles of ways, amounting to approximately 10 trips per year.

Recreation Management Actions

The 22,135 acres of the area recommended suitable would be closed to motorized vehicle use, involving 5.5 miles of ways. Vehicle-oriented recreation would continue on the 4,575 acres recommended nonsuitable. Current overall recreation use in the WSA amounts to approximately 300 visitor days per year.

No Wilderness/No Action

The no wilderness/no action alternative would recommend the entire WSA nonsuitable as wilderness. It represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

All of the 26,590 acres in the WSA would remain open to mineral and energy exploration and development.

Diatomite is given a moderate potential for occurrence; however, there are no known deposits of sufficiently large ore bodies that would merit development. There is an active diatomite mine in the region with ample reserves, leading to the projection that exploration and development of the suspected diatomite deposits within the WSA would not occur.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals. The primary manner in which habitat is managed to support existing populations is through establishment of livestock grazing management plan goals to ensure sufficient forage for wildlife. The proposed riparian fencing project would be constructed along Threemile Creek, involving 1 mile of fence, to protect 1 mile of riparian area. Access to maintain the one existing guzzler would continue to be by vehicle.

Livestock Management Actions

Livestock use would remain at the current level of approximately 2,809 AUMs. The season of use would continue to be from April 16 to September 30.

Vehicle use for livestock management and maintenance of the 2 miles of fence and 11 existing reservoirs would continue on the 7 miles of ways. Such use amounts to approximately 10 trips pear year.

Recreation Management Actions

Use of motorized vehicles would continue on the three existing vehicle ways, totaling 7 miles. Current recreation use is estimated to be 300 visitor days per year.

Summary

Table 1 summarizes the projected management actions under each alternative. Table 2 summarizes the environmental consequences of each alternative.

3. Affected Environment

This section discusses only those activities or resources which influence the character of the study area, or that may be affected by the alternatives.

Wilderness Values

Naturalness

Home Creek WSA is in an exceptionally natural condition. There are few developments within the study area and the effect of outside developments is minimal.

Seventeen unnatural features are located in the WSA; 11 small reservoirs developed for livestock and wildlife, 1 wildlife guzzler, 3 vehicle ways totaling 7 miles and two fences totaling 2 miles. These developments are scattered along the northeastern boundary and visually influence only about two percent of the WSA.

Most of the reservoirs are located on or near the WSA boundary. They are small and can be seen from only small portions of the WSA. The ways have a minor influence on the area's naturalness because they are revegetating and are screened by topography. The fences also have a small impact because they are partially screened by topography or vegetation.

The influence of the unnatural features located outside the WSA boundary is not substantial. Seven reservoirs occur along the northeastern side of the area and can be seen from a very small area within the WSA. The northeastern boundary road has only a small influence on the naturalness of the area because of topographic and vegetative screening. Agricultural and ranching operations of three Catlow Valley ranches (Roaring Springs, Home Creek and Threemile), a powerline and the county road can be seen in the area from the top of Catlow Rim to the western boundary. One or more of these developments can be seen from most points along the rim.

Opportunities for Solitude or Primitive and Unconfined Recreation

Home Creek WSA offers outstanding opportunities for solitude. These opportunities are enhanced by topographic or vegetative screening throughout much of the WSA.

The WSA could sustain a substantial amount of use without adversely affecting opportunities for solitude. Because of the area's size and the extent of attractions (the major drainages and Catlow Rim), visitor use would be relatively dispersed. In addition, solitude is enhanced by topography in portions of the remainder of the area which would also be available for visitors crossing the WSA or seeking features other than the main attractions.

Home Creek WSA offers outstanding opportunities for primitive and unconfined types of recreation, including sightseeing, hunting, photography, wildlife viewing, backpacking, camping, horseback riding and fishing.

Opportunities for day hiking within Home Creek WSA are very good. Primary attractions would be Catlow Rim and Threemile Creek, Home Creek and Dry Creek. The length of these drainages and their ruggedness and steepness would be a challenge to the hiker.

These features would also be of interest to a backpacker. Most of the terrain has areas suitable for camping. The limiting factor for overnight stays is the availability of water.

Game species which can be hunted within the area include mule deer, antelope and chukars, though hunting for mule deer is not of high quality in the area. The general lack of the type of vegetation deer use for cover is not conducive to high quality deer habitat. Opportunities for hunting antelope and chukars are excellent in certain portions of the area. Chukar hunting is especially good along the bottom of Catlow Rim, while certain portions of the area along the eastern boundary provide good antelope hunting.

Fishing opportunities in Home Creek and Threemile Creek are considered good. Good populations of redband trout occur in both streams.

Opportunities for observing wildlife (especially raptors along Catlow Rim), sightseeing and photography are also outstanding in the WSA. Catlow Rim, Threemile Creek and Home Creek provide opportunities for sightseeing and photography. Catlow Rim provides a viewpoint for the surrounding area, while the creek drainages provide interesting views within the study area.

Special Features

The Home Creek WSA contains several special features which enhance the value of the study area as wilderness. These include wildlife, geological and scenic qualities.

Wildlife is a special feature because of the high quality raptor nesting areas and a sage grouse strutting ground. A high concentration of raptor nesting occurs along Catlow Rim and within the steep-walled drainages of the three major canyons which cut through the rim. The U.S. Fish and Wildlife Service identified these notable raptor nesting areas in its February 1980 publication, “Important Fish and Wildlife Habitats of Oregon.” That study pertains to the entire 31-mile length of Catlow Rim and not exclusively to the 9-mile portion within the WSA. Over its length, the rim supports golden eagles, prairie falcons, red-tailed hawks, kestrels and great horned owls (see Map 5).

Another wildlife feature is the sage grouse strutting ground. This is a site where sage grouse conduct an extensive courtship dance prior to mating. The same area is often used year after year, and the birds usually nest within a 2-mile radius of the strutting ground. Sage grouse is a candidate species for Federal listing as threatened or endangered.

Portions of Catlow Rim, including those in the WSA, are potential habitat for bighorn sheep, a species dependent on wild lands and natural conditions.

Home Creek and Threemile Creek contain redband trout, a native fish with limited range. Redband trout is a candidate species for Federal listing as threatened or endangered (see Map 5).

The geology is a special feature in the study area, primarily Catlow Rim. Catlow Rim is a prominent fault scarp, 800 to 1,500 feet in height, which forms the western edge of the southern topographic unit of the Steens Mountain Fault Block. The rim also serves as the eastern boundary of the Catlow Valley, a prominent structural basin or tectonic depression. The base of Catlow Rim contains ancient shoreline features such as gravel bars, spits, wave-built terraces and wave-cut benches which are evidence of the lake that occurred in Catlow Valley during the Pleistocene Age. The area along the rim also provides views of the individual lava flows which make up the Steens Mountain Fault Block (see Map 5).

Catlow Rim and the major canyons make the area's scenery a special feature. The variety of landforms and color, scenic views of the rim and canyons, and their impressive size all contribute to the high quality scenery.

Diversity in the National Wilderness Preservation System (NWPS)

According to the Bailey-Kuchler system of classifying ecosystems, the study area is in the Intermountain Sagebrush Province and the potential natural vegetation is sagebrush steppe communities.

The study area contains seven plant communities listed in the Basin and Range section of the Oregon Natural Heritage Plan and are low sagebrush/Idaho fescue, western juniper/big sagebrush/Idaho fescue, western juniper/low sagebrush/Sandberg's bluegrass, big sagebrush/Idaho fescue, low sagebrush/ Sandberg's bluegrass and western juniper/big sagebrush/ bluebunch wheatgrass.

The Home Creek WSA is within five hours' driving time of one standard metropolitan statistical area with a population over 100,000: Boise, Idaho.

Energy and Mineral Development

The geology, energy and mineral resources of the Home Creek WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, correlating rock units in the WSA with similar environments in other areas that are known to contain mineral deposits and by evaluating a geochemical sampling program conducted by BLM. Technical details of the evaluation are in a mineral resources assessment report, “Catlow Rim Geologic Resource Area (GRA OR-020-20), Harney County, Oregon,” prepared by TERRADATA (a BLM contractor) and in a BLM report on the assessment of mineral resources in the South Harney GRA.

The WSA is within the Catlow Rim geologic resource area which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level). A description of the rating system is provided in the Statewide EIS volume.

Table 3 shows the energy and mineral classifications in the WSA. Map 4 shows where energy and mineral resources have moderate or high potential for occurrence in the WSA.

The surface rocks are composed mainly of Steens basalt which consists of numerous thin flows of olivine basalt with a cumulative thickness of several thousand feet and rare interlayers of tuff. Locally, the area is overlain with semi-consolidated lacustrine (lake) tuffaceous sediments and ash flow tuffs.

Energy Resources

The area is given a low potential for occurrence of oil and gas, although the available information is insufficient to give any confidence to this rating. No energy resources have a moderate potential for occurrence in the WSA. There were no oil and gas or geothermal leases in the WSA as of October 16, l987.

Mineral Resources

Diatomite is given a moderate potential for occurrence in a portion of the WSA. The rating is based on the presence of tuffaceous lacustrine sediments similar to those in other Tertiary basins in southeast Oregon which are known to contain diatomite.

Aside from abundant road aggregate sources, there are no known occurrences of mineral deposits within the WSA. There were no mining claims within the WSA as of October 16, 1987.

Vegetation

The two major vegetative communities in the area occur primarily in conjunction with the two major topographic features, the plateau country east of the rim and the steep canyons of Catlow Rim.

The most extensive community is dominated by low sagebrush and occurs on the plateau. Pockets of big sagebrush also occur. The estimated ecological status of the low sagebrush community is late seral. The potential natural community (PNC) varies with soil depth. On shallow soils, the PNC is low sagebrush and Sandberg’s bluegrass. Idaho fescue replaces Sandberg’s bluegrass on the deeper soils.

Scattered throughout the low sagebrush community are small juniper-covered rock outcrops. Other common species are rabbitbrush, sagebrush, bitterbrush, bluebunch wheatgrass and Sandberg’s bluegrass. The ecological status is estimated to be mid- to late seral and the PNC is juniper and bluebunch wheatgrass.

The other major vegetative community is dominated by western juniper and big sagebrush and occurs in the steep, rocky canyons. On the southern exposures, common species are rabbitbrush, bitterbrush, bluebunch wheatgrass, Thurber’s needlegrass, Sandberg’s bluegrass and cheatgrass. The northern exposures have Idaho fescue, bluegrasses and a variety of forbs in addition to big sagebrush and juniper. The estimated ecological status of these slopes is mid-seral. The PNC on the southern exposures is bluebunch wheatgrass and big sagebrush. On the north exposures, the PNC is big sagebrush and Idaho fescue. Juniper may also be present in the PNC in small amounts.

A smaller community within the juniper/big sagebrush community consists of the riparian areas along both Home Creek and Threemile Creek. Riparian shrubs along these two streams are primarily chokecherry, willow and dogwood. The lower part of both streams are in narrow, rocky, steep-walled canyons, while the upper sections are more open. The riparian habitat of Home Creek consists of 3 miles in the early seral stage, 0.3 miles in the late seral stage and 2 miles in its potential natural community. Threemile Creek riparian habitat consists of 1 mile in the early seral stage and 2.2 miles in the late seral stage. The PNC species are not clearly known, but probably include the species previously mentioned, as well as forbs and grasses.

Wildlife

The Home Creek WSA has a good population of antelope, chukar and sage grouse. Deer use the area during the summer, but are not as abundant as in the upper elevation habitat east of the WSA. They also winter there. Antelope summer east of Catlow Rim where there is low, open habitat, but winter outside of the WSA.

Excellent redband trout populations occur in 2.2 miles of Threemile Creek and the lower 2 miles of Home Creek. Threemile Creek and Home Creek, combined, have 7 miles of trout habitat.

Excellent raptor habitat occurs along the Catlow Rim. Four prairie falcon nests and five golden eagle nests are usually active. This is a high nesting density for the 9 miles of rim located within the WSA. Other raptor species which may use the rim include red-tailed hawks, kestrels, and great horned owls. Peregrine falcons, rarely seen in the area, are a Federal endangered species.

Sage grouse range over the sagebrush covered parts of the WSA. One sage grouse strutting ground exists in the area. Sage grouse is a candidate for Federal listing as threatened or endangered.

Nongame species include those adapted to cliffs and talus habitats, such as bushy-tailed woodrats, long-eared myotis (bats) and small-footed myotis. Other nongame species include those common to big sagebrush, low sagebrush and western juniper habitat. Great Basin pocket mouse, black-tailed jackrabbit, mountain cottontail, yellow pine chipmunk, yellow-bellied sapsucker, common flicker, sage thrasher, Brewer's sparrow and western meadowlark are some of the species using these habitats.

One wildlife guzzler is located within the WSA, near the western boundary line, and is maintained by ODFW twice a year. Access to the guzzler is currently by vehicular means.

Watershed

The WSA contains approximately 7 miles of perennial streams, consisting of Threemile Creek and Home Creek. The upper portions of both streams contain active gully erosion due to years of concentrated grazing pressure. Water quality is poor in the upper reaches of these streams, especially in spring, summer and fall.

Livestock Grazing

The study area is entirely within the South Steens grazing allotment. Currently, all public lands in the WSA are permitted for livestock grazing. Current estimated livestock use is 2,809 AUMs, and the season of use is from April 16 to September 30. Table 4 summarizes existing livestock use in AUMs.

Existing livestock developments in the WSA include 11 reservoirs and 2 miles of fence.

The grazing operator presently uses motorized vehicles for access within and around the study area. Vehicles are used on the boundary roads and ways for salting, hauling horses and livestock supervision. The grazing operators use of the interior ways is minimal. Horses are also used to manage livestock.

Recreation Use

Recreation is primarily oriented towards hunting. Mule deer, antelope and chukar are the most commonly hunted game species.

Because the area is not particularly valued for hunting mule deer, current deer hunting use is low. Certain portions of the area, particularly along the eastern boundary, provide good antelope hunting. Current antelope hunting use is moderate. Both deer and antelope hunters use vehicles for access into the area. The three vehicle ways in the study area are moderately used for hunting access.

Most of the people who hunt chukars along Catlow Rim and in the canyons park on the west boundary road and walk into the WSA. Chukar hunters account for moderate use.

Other recreational activities include fishing, backpacking and sightseeing. Fishing use is moderate and is concentrated along Home Creek, with some use in Threemile Creek. Activities such as sightseeing, hiking and photography account for moderate use, and take place primarily in the canyons and along Catlow Rim.

The current recreational use level is estimated to be approximately 300 visitor days per year.

Local Personal Income

Livestock use at the current level of 2,809 AUMs and recreation use totaling 300 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $33,708 for livestock grazing and $3,600 related to recreation use of the WSA, for an overall total of $37,308. The Statewide EIS volume discusses the term local personal income and how income figures have been derived.

4. Environmental Consequences

This section discusses the environmental consequences of implementing each of the alternatives. Resources and activities not significantly affected by any of the alternatives are not discussed. The Statewide volume discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness: 26,590 acres
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

All of the WSA would be designated wilderness and wilderness values within the entire 26,590 acres would be protected by legislative mandate. Wilderness values of naturalness, solitude, and primitive and unconfined recreation would be preserved. Special features, including scenic values associated with Catlow Rim and the three major canyons, the high quality raptor nesting sites, a sage grouse strutting ground, redband trout habitat and the geology of the area would be protected.

Naturalness

The naturalness of the area's deeply-cut basalt canyons, the Catlow Rim escarpment and its associated scenic values, as well as the rolling plateau portions of the eastern WSA, would be slightly enhanced by the closure of 7+miles of existing ways, which influence approximately 1,000 acres. This closure would allow the ways to naturally revegetate and return to a sagebrush and grass landscape.

The proposed riparian fencing project along Threemile Creek would likely be allowed because the project would protect the natural process, restore deteriorated habitat and would be compatible with the wilderness character of the area. The construction of 1 mile of fence would exclude livestock and allow for revegetation, improving the natural appearance of 1 mile of riparian area. The fence itself, as an unnatural feature, would visually influence approximately 100 acres within the immediate area of the project, along 1 mile of Threemile Creek.

Solitude

Opportunities for solitude provided by the three deeply-cut and winding canyons, the Catlow Rim area and the topography in the remainder of the WSA would slightly improve with the closure of 7 miles of existing ways and the reduction in vehicle-oriented use. Vehicles would be limited to boundary roads, thus providing a core area for people to hike into and experience solitude with no disturbance from vehicle use.

The construction of the riparian fencing project would cause a short-term, localized disturbance to solitude; however, in the long term, solitude would be enhanced by the increased vegetative screening within these riparian areas.

Maintenance of the 11 existing reservoirs would require the use of mechanized heavy equipment approximately once every 10 years for each facility. This maintenance activity would cause minor local impairment of solitude.

Primitive and Unconfined Recreation

Closure of the 7 miles of existing ways to motorized vehicle use would increase opportunities for participating in primitive and unconfined recreation activities such as hiking, sightseeing, hunting, fishing, photography, wildlife viewing, backpacking, camping and horseback riding. The quality of hunting, sightseeing, wildlife viewing and photography would improve with the removal of vehicles and the rehabilitation of ways. A more natural, primitive and wild setting would be provided. Fencing 1 mile of riparian area, excluding livestock and allowing vegetation to recover would enhance wildlife viewing, photography, hunting and fishing opportunities in the Threemile Creek Canyon. Some species populations would increase within these exclosures, providing improved primitive recreation opportunities.

Special Features

Eliminating motor vehicle use within the WSA, involving 7 miles of existing ways, would reduce potential impacts to the area's special features. These impacts include impairment of scenic vistas and minor seasonal disturbance to wildlife that inhabit the study area. The ways traverse areas with populations of sage grouse and antelope, and vehicles utilizing these ways cause minor disturbance to these animals. In areas of scenic quality, the intrusion of vehicles and the imprints of the ways result in visual contrast not in harmony with the natural setting of the WSA.

Conclusion: Wilderness designation of the entire 26,590 acres within the Home Creek WSA would result in protection and enhancement of the existing wilderness values.

Impacts on Energy and Mineral Development

Except for the 1,135 acres of private and split-estate lands, wilderness designation would close 25,120 acres of public land to mineral entry. Included within the withdrawal would be 771 acres rated as having a moderate potential for the occurrence of diatomite.

Energy Development

No energy exploration and development was projected in the area due to the low potential for occurrence of these resources within the WSA.

Conclusion: No impact to energy development is expected.

Mineral Development

Diatomite is given a moderate potential for occurrence; however, there are no known deposits of sufficiently large ore bodies that would merit development. There is an active diatomite mine in the region which has ample reserves, leading to the projection that exploration or development of the suspected diatomite deposits within the WSA would not occur. It is postulated that no exploration for mineral resources would occur on the split-estate and private lands, because these lands are located outside of the areas rated moderately favorable for the occurrence of diatomite.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Wilderness designation would not introduce any significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the vegetative section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid-seral stage overall.

The 7 miles of existing ways, once closed to vehicle use, would naturally revegetate with annual forbs and grasses within approximately two growing seasons. Sagebrush would reestablish in these ways after five years.

The riparian fencing project along 1 mile of Threemile Creek would substantially improve the riparian plant community within this exclosure by eliminating livestock use. Riparian species of chokecherry, willow and golden currant, as well as forbs and grasses, would be reestablished within the exclosure.

Conclusion: The 7 miles of ways (totaling seven acres) would naturally revegetate. Riparian vegetation along 1 mile of Threemile Creek would substantially improve. Overall vegetation would remain unchanged.

Impacts on Wildlife

Wildlife habitat for a summer population of 200 deer and 75 antelope, and a winter population of 100 deer, would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives, including the reintroduction of bighorn sheep.

Improvement of riparian habitat by the projected fencing project would be appropriate in the wilderness area because it would correct the adverse effects of human influences. Improved riparian habitat would allow for an increase in the diversity and number of nongame wildlife species such as yellow warblers and willow flycatchers. Improving the riparian area's condition would stabilize eroding streambanks and would decrease sedimentation of Threemile Creek. Thus, redband trout habitat would improve.

This alternative would also require that routine maintenance of the one wildlife guzzler be done on foot or by horseback. Due to its location near the western boundary road, this should not be a problem. Also, the proposed riparian fence along the upper section of Threemile Creek would be maintained annually and accessed by foot.
The closure of 7 miles of ways would eliminate the relatively light vehicle use and its slight disturbance of wildlife species. Minor seasonal disturbance to sage grouse and antelope from vehicles would be eliminated under this alternative.

Conclusion: Habitat for game and nongame species and their existing levels of populations would be maintained throughout the WSA. Riparian habitat would be improved by construction of 1 mile of riparian fence. One guzzler would be maintained.

Impacts on Watershed

The proposed fencing project at the head of Threemile Creek would exclude livestock and wild horses from the streambank, which would in turn promote stabilization of the gullies and improve water quality in the riparian areas. There would be little change over the rest of the watershed.

Conclusion: Active gullies would begin to stabilize and water quality would improve from the 1 mile of riparian fence. There would be little change in the watershed over the rest of the WSA.

Impacts on Livestock Grazing

Livestock grazing use would remain at 2,809 AUMs, as shown in Table 4. The season of use would remain from April 16 to September 30.

Vehicle use for livestock management and facility inspection and maintenance on 7 miles of ways would be precluded. Annual inspection and maintenance of 2+miles of fences, not accessible to open roads, would be done on foot or by use of riding and pack animals. This would result in some inconvenience and a slight additional expense to the operator. Maintenance of the 11 existing reservoirs, requiring the use of heavy equipment approximately once every 10 years would occur.

Conclusion: Livestock use would remain at 2,809 AUMs. Vehicle use on 7 miles of ways would be precluded, with some increased cost and inconvenience to operators.

Impacts on Recreation Use

Under the all wilderness alternative, the entire 26,590 acres of the WSA would be closed to motorized, vehicle-oriented recreation, including 7 miles of existing ways. This closure would eliminate vehicle-oriented recreation in the WSA, which amounts to approximately 200 visitor days per year.

Primitive recreation is expected to increase by approximately 100 visitor days per year due to the relatively easy access to the study area, especially along the western boundary in the vicinity of Threemile Creek and Home Creek.

Vehicle-oriented recreation is expected to be displaced into other areas or to be partially substituted by primitive recreation activities. Some vehicle-oriented recreationists, primarily big game hunters, would continue to use the WSA, traveling by foot or horseback from the boundary roads. Projected use patterns indicate that the current level of 300 visitor days per year would decrease over time to 200 visitor days per year.

Conclusion: Wilderness designation would result in a reduction in the area's current overall recreation use level of 300 visitor days per year to approximately 200 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 2,809 AUMs. Overall recreation use would decrease by 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $1,200 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $1,000.

Partial Wilderness Alternative (Proposed Action)

Recommended suitable for wilderness: 22,135 acres (assuming acquisition of 120 acres of private land)
Recommended nonsuitable for wilderness: 4,575 acres

Impacts on Wilderness Values

The partial alternative would add 22,135 acres to the NWPS, assuming acquisition of the 1,135 acres of private and split-estate lands and adjacent boundary parcels. In the area recommended suitable, it would preserve wilderness values in the same manner as the all wilderness alternative. Wilderness values of naturalness, solitude, and primitive and unconfined recreation would be preserved. Special features, including scenic values associated with Catlow Rim and the three major drainages, the high quality raptor nesting sites, a sage grouse strutting ground, redband trout habitat and the geology of the area would be protected.

Wilderness values of the 4,575 acres recommended nonsuitable, including those associated with special features would not be protected and could be subject to disturbance from other resource uses.

Naturalness

The naturalness of the area's deeply-cut basalt canyons, the Catlow Rim escarpment and its associated scenic values, as well as the rolling plateau of the eastern portions of the WSA would be slightly enhanced by the closure of 5.5 miles of ways. This closure would allow the ways to naturally revegetate and return to a sagebrush and grass landscape.

The proposed riparian fencing project along Threemile Creek would likely be allowed because it would protect natural processes, restore deteriorated habitat and be compatible with the wilderness character of the area. The construction of the 1 mile of fence would exclude livestock and allow revegetation, improving the natural appearance of 1 mile of riparian area. The fence itself, as an unnatural feature, would influence approximately 100 acres within the immediate area along 1 mile of Threemile Creek.

Reservoir maintenance would require heavy equipment access on the 5.5 miles of ways approximately once every 10 years for each of the 11 existing reservoirs. This infrequent use would not prevent revegetation of the ways.

In the portion recommended nonsuitable, continued use of 1.5 miles of ways would maintain impacts of vehicle tracks and usage upon naturalness preventing the ways from revegetating, affecting approximately 213 acres in the WSA.

Solitude

Opportunities for solitude provided by the area's three deeply-cut and winding canyons, the Catlow Rim area and the topography in the remainder of the WSA would slightly improve with the closure of 5.5 miles of existing ways and a reduction in vehicle use. Vehicles would be limited to boundary roads, thus providing a core area for people to hike into and experience solitude with no disturbance from vehicles.

The construction of the riparian fencing project would cause a short-term, localized disturbance to solitude in these riparian areas; however, in the long term, solitude would be enhanced by the improved vegetative screening within these riparian areas.

Maintenance of the 11 existing reservoirs would require the use of heavy equipment approximately once every 10 years for each facility. This maintenance activity would cause minor local impairment of solitude.

Continued use of 1.5 miles of ways in the nonsuitable portion would maintain short-term local impairment of solitude opportunities in the vicinity of the ways.

Primitive and Unconfined Recreation

Closure of 5.5 miles of existing ways to motorized vehicle use would increase opportunities for participating in primitive and unconfined recreation activities such as hiking, sightseeing, hunting, photography, wildlife viewing, fishing, backpacking, camping and horseback riding. The quality of these primitive recreation activities would improve with the removal of vehicles and the rehabilitation of 5.5 miles of ways. A more natural, primitive and wild setting would be provided. Fencing 1 mile of riparian area, excluding livestock and allowing vegetation to recover, would enhance wildlife viewing, photography, hunting and fishing opportunities in the Threemile Creek Canyon. Some species populations would increase, providing improved primitive recreation opportunities.

In the nonsuitable portion, vehicle use of 1.5 miles of ways that remain open would continue to intrude on primitive, nonmotorized recreation opportunities in the vicinity of the ways.

Special Features

Eliminating motorized vehicle use on the 5.5 miles of existing ways would reduce potential impacts to the area's special features. These impacts include impairment of scenic vistas and minor seasonal disturbance to wildlife that inhabit the study area. The ways traverse areas with populations of sage grouse and antelope, and vehicles using these ways cause minor disturbance to these animals. In areas of scenic quality, the intrusion of vehicles and the imprints of the ways result in visual contrasts not in harmony with the natural setting.

Continued vehicle use of 1.5 miles of ways, in the nonsuitable portion, would cause minor disturbance to sage grouse and antelope. None of the special features (see Special Features section), would be significantly impacted.

Conclusion: Wilderness designation of 22,135 acres within the Home Creek WSA would result in protection and enhancement of existing wilderness values. On 4,575 acres not designated as wilderness, existing wilderness values would be little affected since no substantial incompatible actions are projected.

Impacts on Energy and Mineral Development

The partial wilderness alternative would close 21,000 acres of public land to all forms of mineral entry, plus an additional 1,135 acres of private land and mineral estate of split-estate lands proposed for acquisition would be withdrawn from mineral entry.

Energy Development

No energy exploration and development is projected in the area due to the low potential for occurrence of these resources in the WSA.

Conclusion: No impact to energy development is expected.

Mineral Development

Diatomite is given a moderate potential for occurrence; however, there are no known deposits of sufficiently large ore bodies that would merit development. There is an active diatomite mine in the region which has ample reserves, leading to the projection that exploration or development of the suspected diatomite deposits within the WSA would not occur, even in the nonsuitable portion.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Wilderness designation of 22,135 acres would not introduce any significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the vegetative section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid-seral stage overall.

The 5.5 miles of ways, once closed to vehicle use, would naturally revegetate with annual forbs and grasses within approximately two growing seasons. Sagebrush would become reestablished on these ways after five years.

The riparian fencing project along 1 mile of Threemile Creek would substantially improve the riparian plant community within these exclosures by eliminating livestock use. Riparian species of chokecherry, willow and golden currant, as well as forbs and grasses, would become reestablished within the exclosure.

In the nonsuitable portion, continued use of 1.5 miles of ways would prevent their revegetation.

Conclusion: A total of 5.5 miles of ways (totaling 5.5 acres) would naturally revegetate. Riparian vegetation (within the proposed exclosure) along Threemile Creek would substantially improve. Overall vegetation would remain unchanged.

Impacts on Wildlife Habitat

In the suitable portion, wildlife habitat for a summer population of 200 deer and 65 antelope, and a winter population of 100 deer, would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives, including the reintroduction of bighorn sheep.

Improvement of the riparian habitat by the proposed fencing project would be appropriate in the wilderness area because it would correct the adverse effects of human influences. Improved riparian habitat would allow for an increase in the diversity and number of nongame wildlife species such as yellow warblers and willow flycatchers. Improving the riparian area's condition would stabilize eroding streambanks and would decrease sedimentation of Threemile Creek. Thus, redband trout habitat would improve.

This alternative would also require that routine maintenance of the wildlife guzzler be done on foot or by horseback. Due to the guzzler's location near the western boundary road, this should not be a problem. Also, the proposed riparian fence along the upper section of Threemile Creek would be maintained annually and accessed by foot.

The closure of 5.5 miles of ways would not have a substantial impact on most wildlife species due to the relatively light vehicle use. Minor seasonal disturbance to sage grouse and antelope from vehicles would be substantially reduced under this alternative.

In the nonsuitable portion, habitat for 10 summering antelope occurs which could be disturbed, although no disturbance is projected. Riparian habitat occurs along 0.6 mile of Home Creek in this nonsuitable area.

Acquisition of 1,135 acres of private land and split-estate land would ensure protection of habitat used by summering antelope, sage grouse and nongame species in the suitable portion. Home Creek flows through one tract of this private land for about 0.1 mile. This part of Home Creek is a mid-seral stage riparian habitat and contains redband trout.

Conclusion: Most wildlife habitat would be preserved and riparian habitat improved by constructing 1 mile of riparian fencing. Bighorn sheep habitat would be maintained. One guzzler would be maintained.

Impacts on Watershed

The proposed fencing project at the head of Threemile Creek would exclude livestock and wild horses from the streambanks, which would in turn promote stabilization of the gullies and improve the water quality of the stream. There would be little change in the watershed in the rest of the WSA, either within or outside the suitable area.

Conclusion: Active gullies would begin to stabilize and water quality would improve from 1 mile of riparian fence. There would be little change in the watershed over the rest of the area.

Impacts on Livestock Grazing

Livestock use would remain at 2,809 AUMs as shown in Table 4. The season of use would remain from April 16 to September 30.

Vehicle use for livestock management and facility inspection and maintenance on 5.5 miles of ways would be precluded. Annual inspection and maintenance of the 2 miles of fences, not accessible to open roads, would be done on foot or by the use of riding and pack animals. This would result in some inconvenience and a slight additional expense to the operator. Maintenance of the 11 existing reservoirs would require the use of heavy equipment approximately once every 10 years for each existing facility.

In the nonsuitable portion, vehicle use of 1.5 miles of ways would continue for livestock management and facility maintenance.

Conclusion: Livestock use would remain at 2,809 AUMs. Vehicle use on 5.5 miles of ways would be precluded resulting in some inconvenience and a slight additional expense to the livestock operator. Vehicle use would continue on 1.5 miles of ways in the nonsuitable portion.

Impacts on Recreation Use

Under the partial wilderness alternative, the entire 22,135 (assuming acquisition is successful) acres recommended suitable for wilderness designation would be closed to motorized, vehicle-oriented recreation, involving 5.5 miles of existing ways. This closure would reduce vehicle-oriented recreation, which amounts to less than 200 visitor days per year.

Primitive recreation is expected to increase by 100 visitor days per year due to the relatively easy access into the study area, especially along the western boundary in the vicinity of Threemile Creek and Home Creek.

Vehicle-oriented recreation is expected to be displaced into other areas and to be partially substituted by primitive recreation activities. Some vehicle-oriented recreationists, primarily big game hunters, would continue to use the WSA, traveling by foot or horseback. Projected use patterns indicate that the current level of 300 visitor days per year would decrease over time to 200 visitor days per year.

In the nonsuitable portion, vehicle-oriented recreation would continue on the 1.5 miles of ways remaining open.

Conclusion: Wilderness designation would result in a reduction in the area's current overall recreation use level of 300 visitor days per year to approximately 200 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 2,809 AUMs. Overall recreation use would decrease by 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $1,200 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $1,000.

No Wilderness/No Action

Recommended suitable for wilderness: 0 acres
Recommended nonsuitable for wilderness: 26,590 acres

Impacts on Wilderness Values

Under the no wilderness alternative, the entire 26,590 acres would not be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude and primitive and unconfined recreation, and the area's special features, including scenic values associated with Catlow Rim and the three major canyons, the high quality raptor nesting sites, a sage grouse strutting ground, redband trout habitat and the geology of the area would be subject to the effects of projected management actions.

Naturalness

Continued vehicle use of the 7 miles of existing ways would maintain the impacts of vehicle tracks and usage upon naturalness, affecting approximately 1,000 acres (less than four percent) of the WSA. Most of this influence upon the area's naturalness occurs in the eastern portions of the WSA.

Construction of the 1 mile of riparian fencing would exclude livestock and allow for revegetation, improving the natural appearance of 1 mile of riparian area. The fence itself, as an unnatural feature, would influence approximately 100 acres within the immediate area of the project.

Solitude

Continued vehicle use on 7 miles of existing ways and the associated human activity would cause short-term, local impairment of solitude opportunities in the vicinity of the ways. Vehicle use occurs mostly in the eastern portions of the WSA. Solitude opportunities in the three major canyons and along Catlow Rim would remain unchanged.

Primitive and Unconfined Recreation

Vehicle use would continue to be limited to the existing 7 miles of ways due to the area's topography. However, such use would continue to intrude upon primitive, nonmotorized recreation opportunities in the vicinity of these ways in the WSA. Construction of the riparian fencing project would improve opportunities for primitive and unconfined recreation associated with the riparian enhancement, such as fishing, hunting, birdwatching and camping in a natural setting.

Special Features

The outstanding scenic qualities associated with Catlow Rim and the three major canyons, the high quality raptor nesting sites, a sage grouse strutting ground, redband trout habitat and the geology of the area would be open to disturbance and impacts from possible development of other resources. Monitoring and mitigation measures could reduce or eliminate possible impacts. Continued vehicle use would maintain the impacts on scenic vistas and minor seasonal disturbance to wildlife that inhabit the study area.

The riparian fencing project would exclude livestock, resulting in the enhancement and protection of the riparian areas in Threemile Creek Canyon. The improved riparian area would enhance the area's scenic qualities and provide for increases in species populations dependent upon riparian habitat, including game birds and redband trout.

Conclusion: In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 100 acres, with further declines from other potential uses over the long term.

Impacts to Energy and Mineral Development

The entire WSA (26,590 acres) would remain open to mineral exploration and development.

Energy Development

No energy exploration and development is projected in the area due to the low potential for occurrence of these resources in the WSA.

Conclusion: No impact to energy development is expected.

Mineral Development

Diatomite is given a moderate potential for occurrence; however, there are no known deposits of sufficiently large ore bodies that would merit development. There is an active diatomite mine in the region which has ample reserves, leading to the projection that exploration and development of the suspected diatomite deposits within the WSA would not occur.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

The 7 miles of existing ways would not revegetate due to continued use by vehicles.

The riparian fencing project along 1 mile of Threemile Creek would substantially improve the riparian plant community within these exclosures by eliminating livestock use. Riparian species of chokecherry, willow and golden currant would become reestablished within the exclosures.

Conclusion: Riparian vegetation along 1 mile of Threemile Creek would substantially improve. Overall vegetation would remain unchanged.

Impacts to Wildlife Habitat

Wildlife habitat for a summer population of 200 deer and 75 antelope, and a winter population of 100 deer, would be maintained under this alternative. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives, including the reintroduction of bighorn sheep.

Continued seasonal disturbance on 7 miles of ways would maintain only minor and temporary disturbance to wildlife populations including deer, sage grouse, bighorn sheep and antelope. The minor disturbance from these ways would have little impact on raptors.The riparian fencing project along Threemile Creek to exclude livestock would be constructed. Water quality, wildlife and fisheries habitat would be improved within this exclosure. Improved riparian habitat would allow for an increase in the diversity and number of nongame wildlife species such as yellow warblers and willow flycatchers. Improving the riparian area's condition would stabilize eroding streambanks and would decrease the sedimentation of Threemile Creek. Redband trout habitat would improve.

The one existing wildlife guzzler would continue to be maintained annually by ODFW and would be accessed by vehicles. The proposed riparian fence along the upper portion of Threemile Creek would be maintained annually and accessed by vehicle and on foot.

ODFW management objectives for deer and sage grouse could be met by this alternative. Habitats of these species would be maintained.

Conclusion: Wildlife populations of game and nongame species would sustain minor temporary levels of harassment due to human activity associated with existing vehicle use. The riparian fence would improve habitat for nongame wildlife and redband trout. Raptors would be little affected by the actions that have been projected.

Impacts on Watershed

As in the previous alternatives, the proposed riparian fencing at the head of Threemile Creek would provide protection to the areas of active gullying and improve water quality in this area. There would be little change in the watershed over the rest of the WSA.

Conclusion: Active gullies would begin to stabilize and water quality would improve from 1 mile of riparian fence. There would be little change over the rest of the watershed.

Impacts on Livestock Grazing

Livestock grazing use would remain at 2,809 AUMs, as shown in Table 4. The season of use would remain from April 16 to September 30.

Vehicle use for livestock management and facility inspection and maintenance would continue on 7 miles of ways.

Conclusion: Livestock grazing use would remain at 2,809 AUMs.

Impacts on Recreation Use

Motorized recreation use would continue within the WSA, limited to the existing 7 miles of ways due to the area's topography. Primitive recreation activities would be subject to continued disturbance by motor vehicles, but the encounters would be infrequent because primitive recreation use would occur primarily along Catlow Rim and in the three major canyons, all of which are inaccessible to vehicles. Projected use patterns indicate that the current level of 300 visitor days per year would increase over time to 400 visitor days per year.

Conclusion: Recreation use would increase from the current level of 300 visitor days per year to approximately 400 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 2,809 AUMs. Overall recreation use would increase by 100 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $1,200 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by approximately $1,000.

Unavoidable Adverse Impacts of the Proposed Action

Under the Proposed Action (Partial Wilderness Alternative), vehicle use would be excluded on 5.5 miles of ways, reducing opportunities for those who prefer this type of recreation. There would be a slight increase in livestock management costs as a result of the closure of the ways. Construction of 1 mile of riparian fencing would subtantially improve a 1-mile riparian area along Threemile Creek, but the unnatural feature of the fencing would visually influence approximately 100 acres within its vicinity.

Relationship Between Short-term Uses and the Maintenance and Enhancement of Long-term Productivity

Under the Proposed Action, most existing short-term uses would continue, with some added, minor inconvenience and expense to livestock operators resulting from the exclusion of vehicles for day-to-day inspection activities on 5.5 miles of ways. Vehicle-oriented recreation uses, such as hunting, would be replaced by other types of primitive recreation activities. The long-term productivity of the wilderness values on 22,015 acres would be preserved, while 4,575 acres not designated wilderness would be subject to wilderness impairment from potential use over the long term. A 1-mile section of riparian fencing needed along Threemile Creek to protect natural processes would visually influence approximately 100 acres.

Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, there would be no irreversible or irretrievable commitment of the wilderness resource or any other resource from projected activities either within or outside the suitable area. A 1-mile section of riparian fencing needed along Threemile Creek to protect natural processes would visually influence approximately 100 acres.

5. Wilderness Manageability and Rationale for the Proposed Action

Manageability of the Area as Wilderness

The Home Creek WSA would be manageable as wilderness under both the All Wilderness alternative and the Proposed Action. Relatively minor manageability problems with boundary identification under the all wilderness alternative would be resolved under the Proposed Action by recommending small portions of the area as nonsuitable for wilderness and by recommending acquisition of small parcels of private land and the mineral estate of split-estate lands.

Under the all wilderness alternative, the presence of the mineral estate lands could cause manageability problems if mineral development ever occurred. However, the parcels are outside of areas having potential mineral values and there are no known plans for mineral development at this time.

Rationale for the Selection of the Proposed Action

The Partial Wilderness Alternative is the Proposed Action because the Home Creek WSA contains a number and variety of wilderness values. The WSA is in an exceptionally natural condition and possesses outstanding opportunities for solitude and primitive types of recreation. The WSA has special features, including scenic qualities, an area of geological interest and wildlife habitat. Designation of the Home Creek study area as wilderness would protect these special features and help to maintain and improve the Threemile Creek watershed which feeds a downstream reservoir used to supply fish hatchery stock.

Land along the western and southern boundaries would be recommended nonsuitable for wilderness to provide a more manageable wilderness boundary. Land in the southeast part of the WSA would be recommended nonsuitable so that a route which provides access to a large area of public and private land could remain open to vehicle use.

6. Summary and Analysis of Public Comments

Following is a summary of public comments specific to this WSA concerning adequacy of the analysis in this appendix and responses to those comments. These comments were received both in writing and oral testimony at public hearings during the comment periods for the 1985 Draft EIS and the 1987 Supplement to the Draft EIS. Comments concerning the BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning statewide issues and analysis are addressed in the Statewide volume.

Comment: Need to consider an alternative that combines several WSAs into a Steens Mountain complex. **Response:** An enhanced wilderness alternative is not analyzed for this study area because it would not be significantly different from the all wilderness alternative. Combining Home Creek WSA with the adjacent South Fork of the Donner und Blitzen WSA by closing the road between them is not considered to be a feasible alternative; the road serves as needed access to private and public land outside the study area in an area with limited access. See Chapter 2 for the description of alternatives considered, but not analyzed in detail.

Comment: If ways are closed, access will be controlled by the Roaring Springs Ranch. **Response:** Under all of the alternatives, the way that forms the northern boundary line and originates at the Roaring Springs Ranch Headquarters would remain open on public lands. However, access could be controlled on the adjacent private land by private landowners. Access to the WSA could be limited by adjacent private landowners; however, access points located on public land are located at Threemile Creek, Home Creek and along the eastern boundary line.

Comment: There are major problems with split-estate mineral and energy resources with the State of Oregon. **Response:** There are approximately 1,470 acres of split estate within the WSA. An attempt for acquisition or land exchange is projected for most of this mineral estate under the partial wilderness alternative (proposed action).

Comment: Wilderness designation would have significant impacts on the development of adjacent private and public lands. **Response:** The designation of wilderness would not prohibit development on private lands nor will access be denied to private land through lands administered by the BLM, however, the closure of 5.5 miles of ways in the proposed action could result in some inconvenience. Development would be limited on public lands within a designated wilderness area with the exception of those projects that would enhance wilderness values or for activities that have "existing rights" prior to wilderness designation.

Comment: There are serious conflicts with oil, gas, geothermal, mineral and range developments. **Response:** Environmental consequences, Section 4, examines those resources affected by each alternative. In all three alternatives analyzed, the potential for locating either mineral or energy resources is considered low within the entire WSA. No development is expected regardless of the area being designated wilderness or released from wilderness review by Congress. In the proposed alternative (partial alternative), livestock use would remain at 2,809 AUMs. Vehicle use on 5.5 miles of ways would be precluded resulting in some inconvenience and a slight additional expense to the livestock operators. Vehicle use would continue on 1.5 miles of ways in the nonsuitable portion.

Comment: Wilderness values would be impaired because of frequent low-level military flights through the proposed wilderness area. **Response:** At the present time, there are no military training routes through any portion of this WSA. The closest route is approximately 8 miles to the north of the WSA. BLM is monitoring low-level aircraft 2,000 feet above the ground level over WSAs in order to establish a data base.

Table 1. Summary of Proposed Management Under Each Alternative, Home Creek WSA (OR-2-85H)

Proposed Management	All Wilderness	Partial	No Wilderness/ No Action
Acres Designated as Wilderness	26,590	22,015	0
Acres Closed to ORVS by Wilderness Designation	26,590	22,015	0
Miles of Ways Closed	7	5.5	0
Acres of Full Fee Estate Acquired [1]	0	120	0
Acres of Mineral Estate Acquired [2]	0	1,015	0
Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation	25,120	21,000	0
Structural Wildlife Projects Developed: Fences (miles)	1	1	1

[1] Upon acquisition, these additional lands would be incorporated into the wilderness area, closed to vehicle use, and withdrawn from mineral location and leasing.
[2] Upon acquisition of mineral estate, these lands would be withdrawn from mineral location and leasing.

Table 2. Summary of Environmental Consequences of Alternatives, Home Creek WSA (OR-2-85H)

Resource or Activity	All Wilderness	Partial (Proposed Action)	No Wilderness/ No Action
Wilderness Values	Wilderness designation of the entire 26,590 acres within the Home Creek WSA would result in protection and enhancement of the existing wilderness values.	Wilderness designation of 22,135 acres within the Home Creek WSA would result in protection and enhancement of existing wilderness values. On 4,575 acres not designated as wilderness, existing wilderness values would be little affected since no substantial incompatible actions are projected.	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 100 acres, with further declines from other potential uses over the long term.
Energy and Mineral Development	No impact to energy or mineral development is expected.	No impact to energy or mineral development is expected.	No impact to energy or mineral development is expected.
Vegetation	The 7 miles of ways totaling 7 acres would naturally revegetate. Riparian vegetation along 1 mile of Threemile Creek would substantially improve. Overall vegetation would remain unchanged.	A total of 5.5 miles of ways (totaling 5.5 acres) would naturally revegetate. Riparian vegetation (within the proposed exclosure) along Threemile Creek would substantially improve. Overall vegetation would remain unchanged.	Riparian vegetation along 1 mile of Threemile Creek would substantially improve. Overall vegetation would remain unchanged.
Wildlife	Habitat for game and nongame species and their existing levels of populations would be maintained throughout the WSA. Riparian habitat would be improved by construction of 1 mile of riparian fence. One guzzler would be maintained.	Most wildlife habitat would be preserved and riparian habitat improved by constructing 1 mile of riparian fencing. Bighorn sheep habitat would be maintained. One guzzler would be maintained.	Wildlife populations of game and nongame species would sustain minor temporary levels of harassment due to human activity associated with existing vehicle use. The riparian fence would improve habitat for nongame wildlife and redband trout. Raptors would be little affected by the actions that have been projected.
Watershed	Active gullies would begin to stabilize and water quality would improve from the 1 mile of riparian fence. There would be little change in the watershed over the rest of the WSA.	Active gullies would begin to stabilize and water quality would improve from 1 mile of riparian fence. There would be little change in the watershed over the rest of the area.	Active gullies would begin to stabilize and water quality would improve from 1 mile of riparian fence. There would be little change over the rest of the watershed.
Livestock Grazing	Livestock use would remain at 2,809 AUMs. Vehicle use on 7 miles of ways would be precluded, with some increased cost and inconvenience to operators.	Livestock use would remain at 2,809 AUMs. Vehicle use would be precluded on 5.5 miles of ways resulting in some inconvenience and slight additional expense to operators. Vehicle use would continue on 1.5 miles of ways in the nonsuitable portion.	Livestock grazing use would remain at 2,809 AUMs.
Recreation	Wilderness designation would result in a reduction in the area's current overall recreation use level of approximately 300 visitor days to approximately 200 visitor days per year.	Wilderness designation would result in a reduction in the area's overall recreation use level of 300 visitor days per year to approximately 200 visitor days per year.	Recreation use would increase from the current level of 300 visitor days per year to approximately 400 visitor days per year.
Local Personal Income	Annual local personal income would decrease by approximately $1,000.	Annual local personal income would decrease by approximately $1,000.	Annual local personal income would increase by approximately $1,000.

Table 3. Classification of Energy and Mineral Potential, Home Creek WSA (OR-2-85H)

Commodity	Area	Level of Potential	Level of Certainty
Metals	Entire WSA	O	B
Geothermal	Entire WSA	O	D
Uranium/Thorium	Entire WSA	O	A
Coal	Entire WSA	O	B
Oil/Gas	Entire WSA	L	A
Tar Sands/Oil Shale	Entire WSA	O	C
Limestone	Entire WSA	O	C
Bentonite	Entire WSA	O	A
Diatomite	See Map 4	M	C
	Rest of WSA	O	B
Zeoloites	Entire WSA	O	A

Legend:

Level of Potential

O - No indications for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource.
M - Moderate potential for accumulations of energy/mineral resource.
H - High potential for accumulations of energy/mineral resource.

Level of Certainty

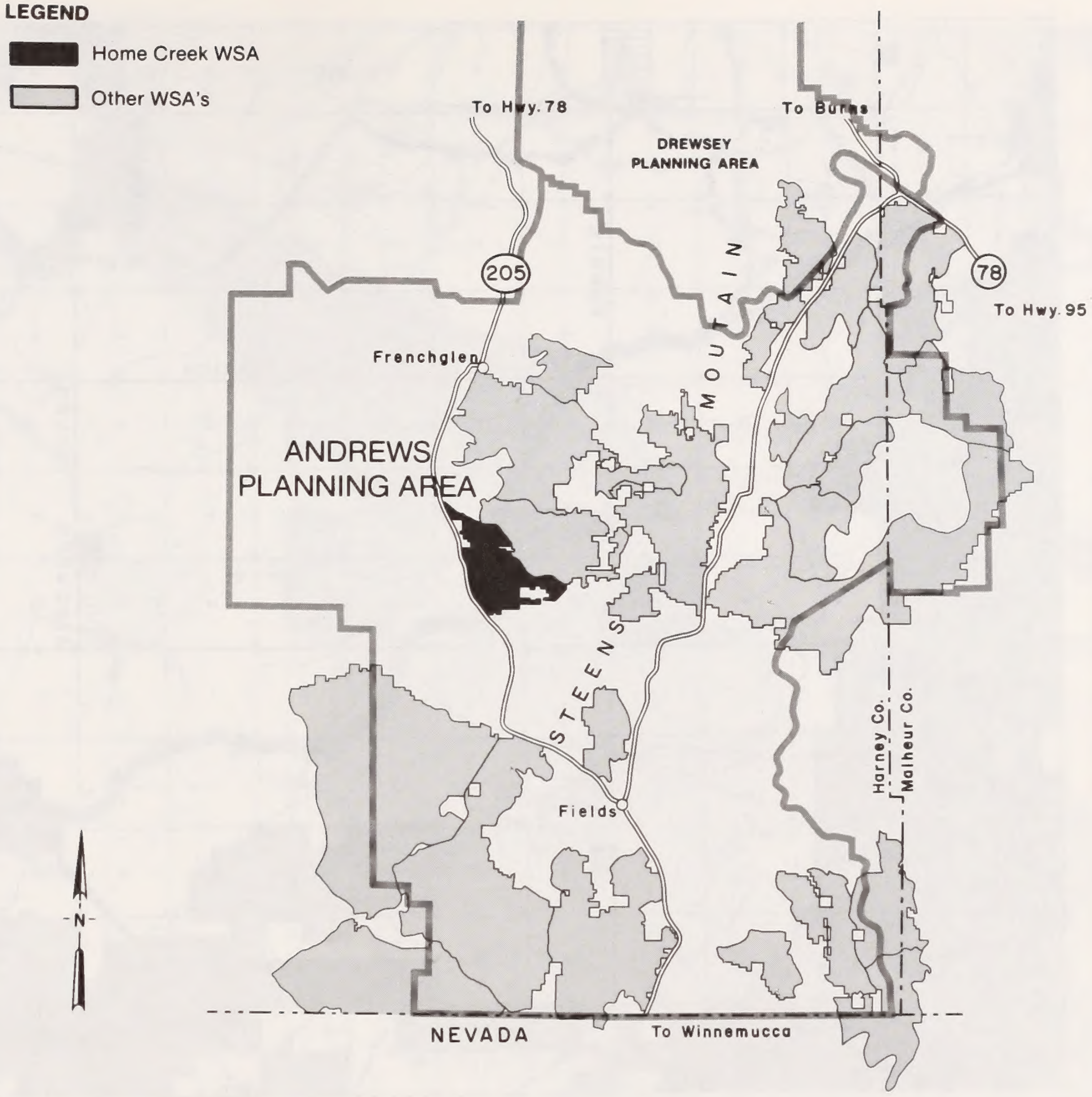
A - Insufficient data or no direct evidence
B - Indirect evidence available
C - Direct evidence but quantitatively minimal
D - Abundant direct and indirect evidence

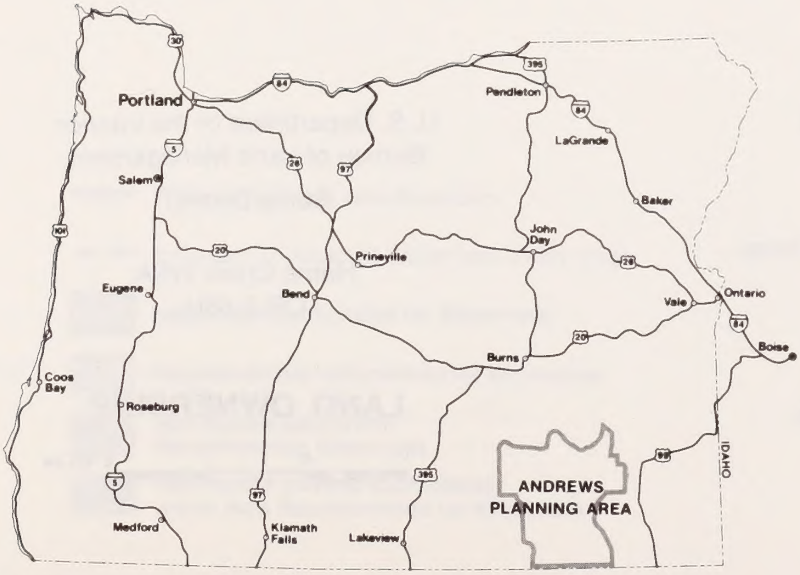
Table 4. Existing Livestock Use, Home Creek WSA (OR-2-85H)

Grazing Allotment	Licensed AUMs in Allot.	Period of Use	Percent of Allot. in WSA	Current Estimated Use in WSA (AUMs)
South Steens (No. 6002)	3,681	04/16-09/30	11	2,809

Table 5. Effects of Alternatives on Local Personal Income, Home Creek WSA (OR-2-85H) (1981 price levels)

Item	Unit of Measure	All Wilderness	Partial Wilderness	No Wilderness/ No Action
CHANGES IN RESOURCE OUTPUTS				
Livestock Grazing	AUMs	No Change	No Change	No Change
Recreation Use	RVD	-100	-100	+100
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES				
Livestock Grazing	$	0	0	0
Recreation Use	$	-1,200	-1,200	+1,200
Total	$	-1,200	-1,200	+1,200





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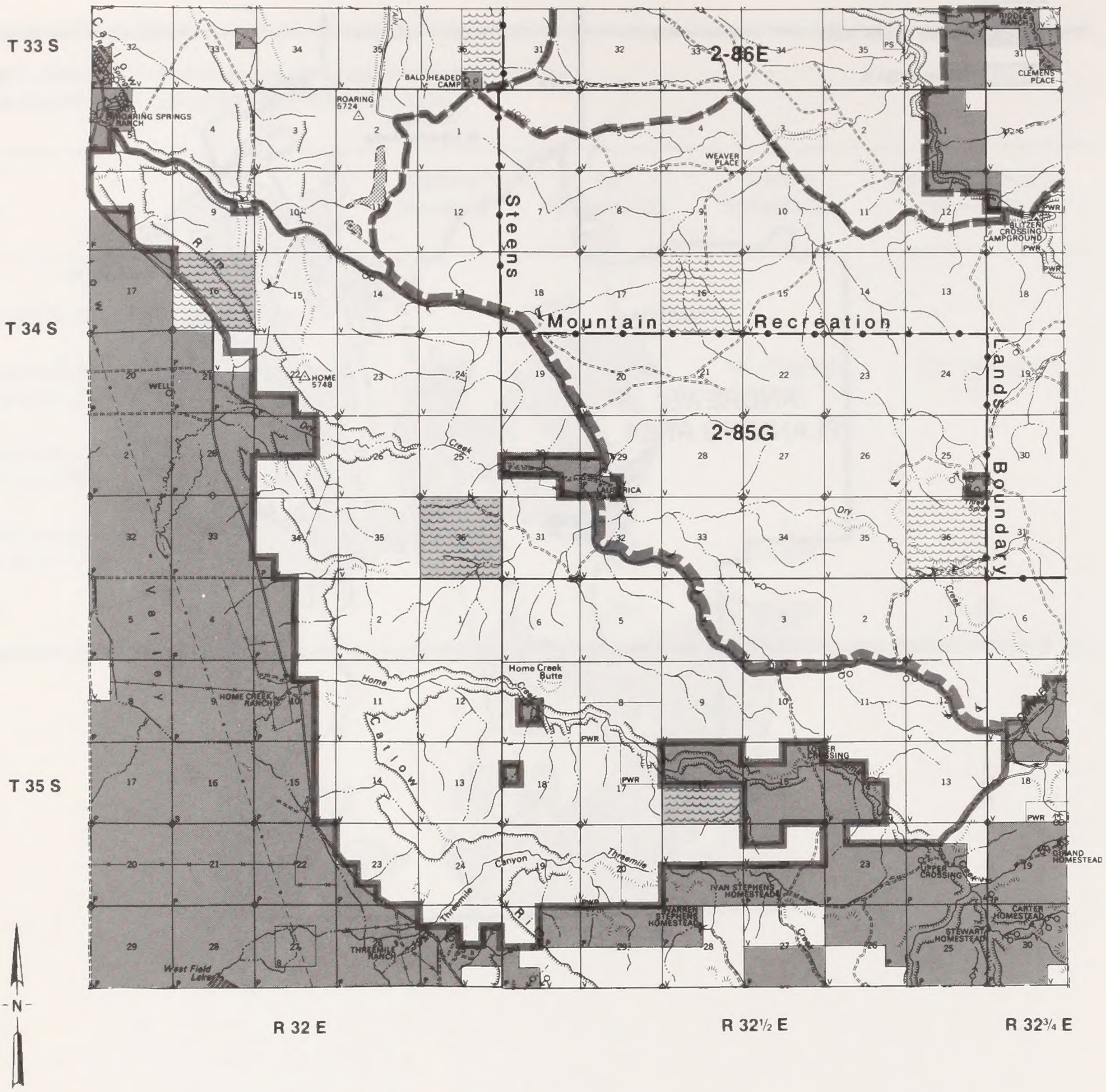
Home Creek WSA
OR-2-85H

LOCATION MAP

10 0 10 MILES

MAP 1



LEGEND

▨ BLM Land Studied Under Section 202 of FLPMA (Other BLM Land in WSA Studied Under Section 603 of FLPMA)

━ Wilderness Study Area Boundary

╍ Boundary of Adjacent Wilderness Study Areas

☐ Bureau of Land Management

■ Private

▤ BLM Surface-State or Private Subsurface (Split Estate)

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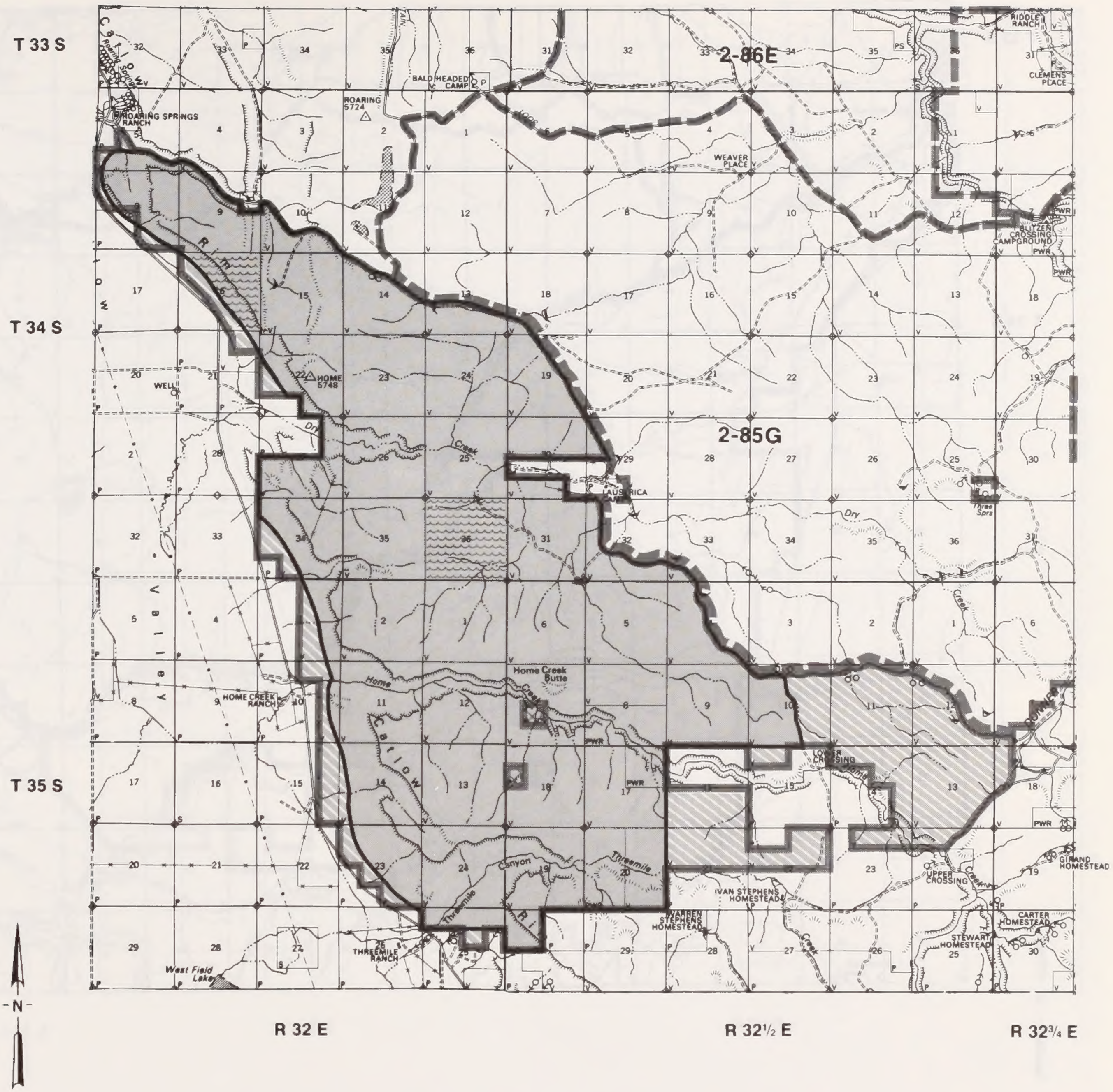
LAND OWNERSHIP

1 0 1 2 MILES

MAP 2



- ▬ Wilderness Study Area Boundary
- ▬ ▬ Boundary of Adjacent Wilderness Study Areas
- ▭ Recommended Suitable for Wilderness
- ▨ Recommended Non-suitable for Wilderness
- ▩ Non-Federal Land within Recommended Wilderness
- ▤ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness

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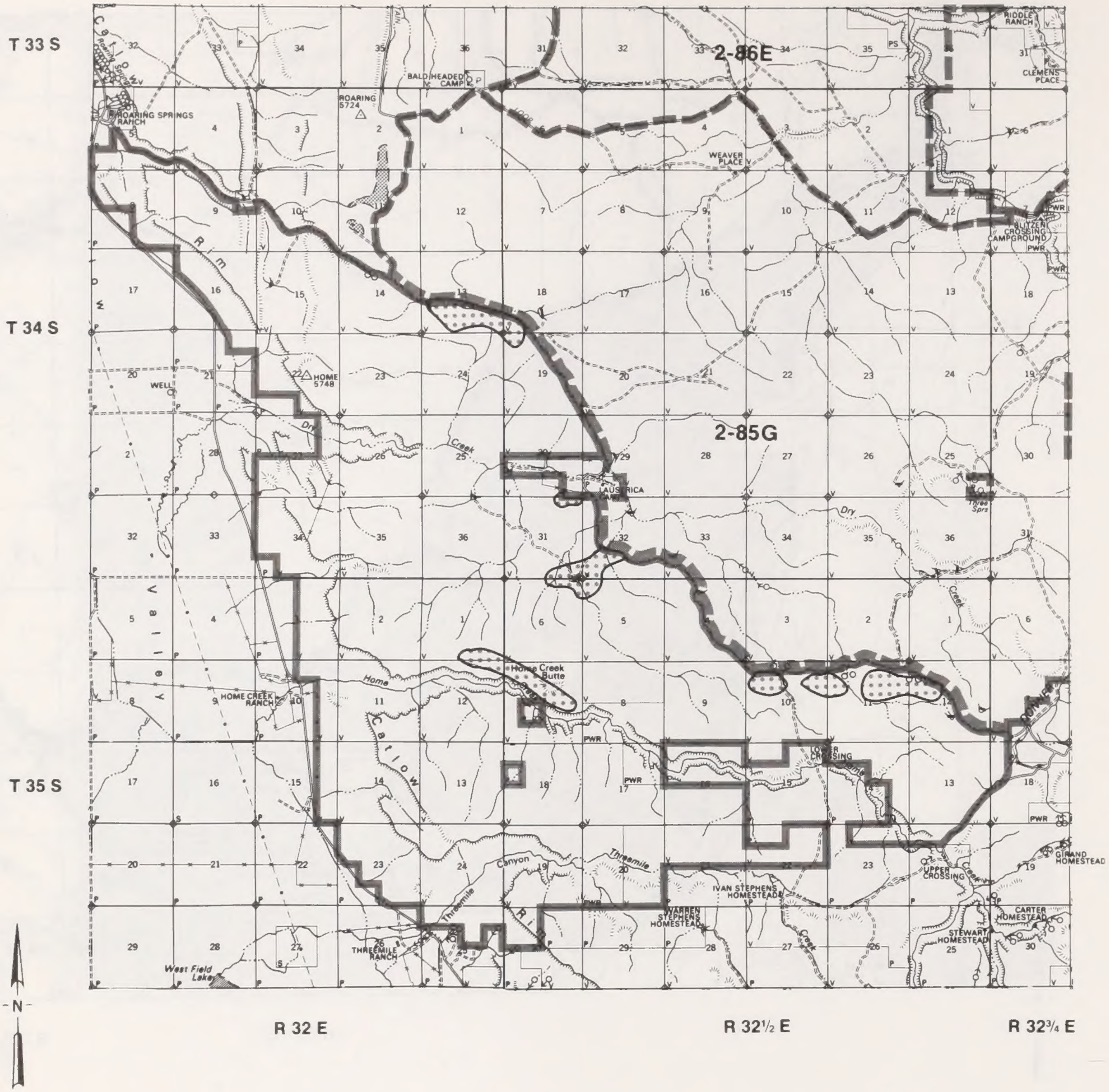
PARTIAL ALTERNATIVE

1 0 1 2 MILES

MAP 3



▨ **Moderate Potential (MC) for Diatomite**

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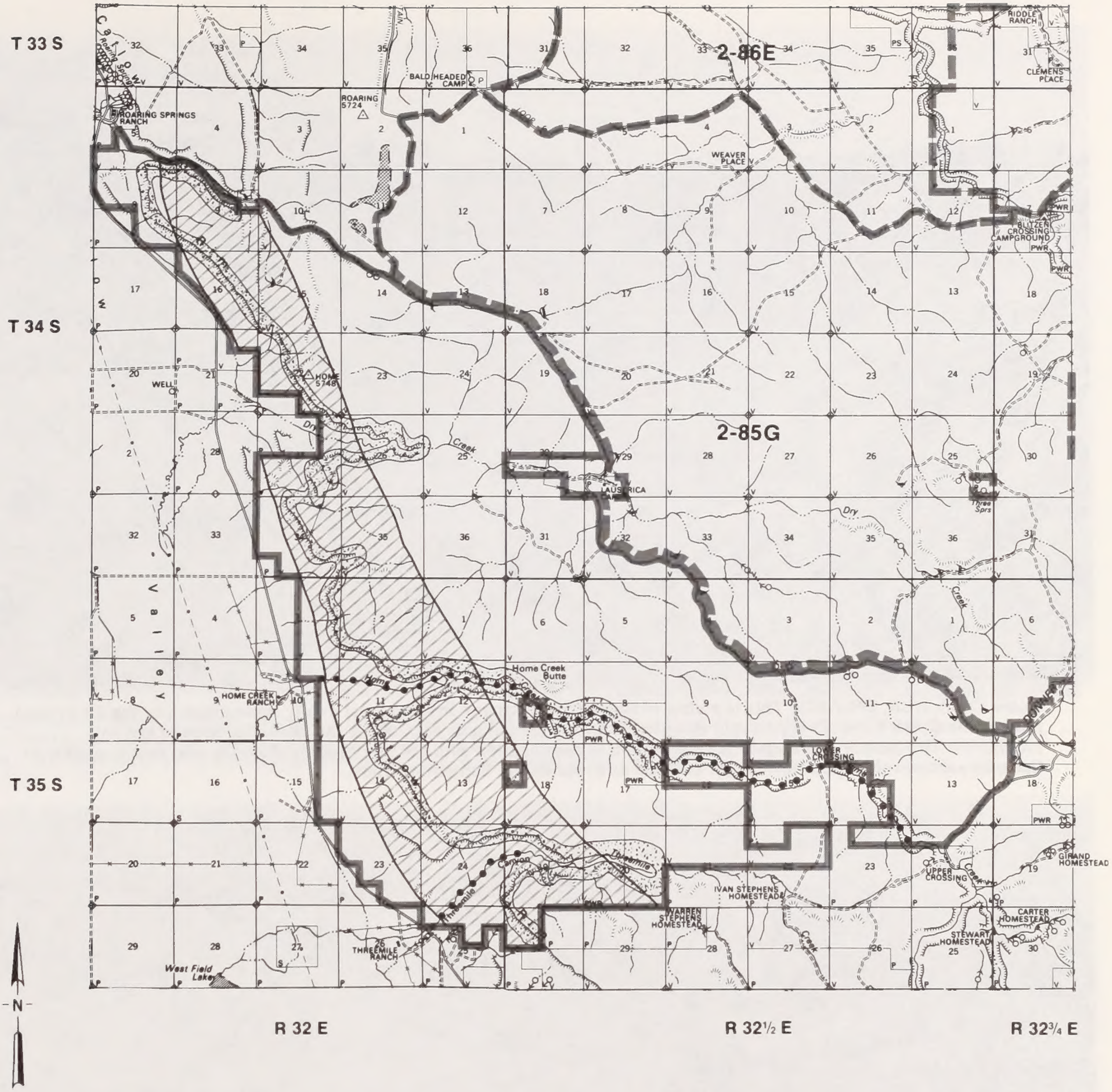
MODERATE OR HIGH POTENTIAL MINERAL OR ENERGY RESOURCES

1 0 1 2 MILES

MAP 4



• • • Redband Trout Habitat

▨ Deer Winter Range

░ Raptor Nesting Area (includes Geologic Special Interest)

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Home Creek WSA
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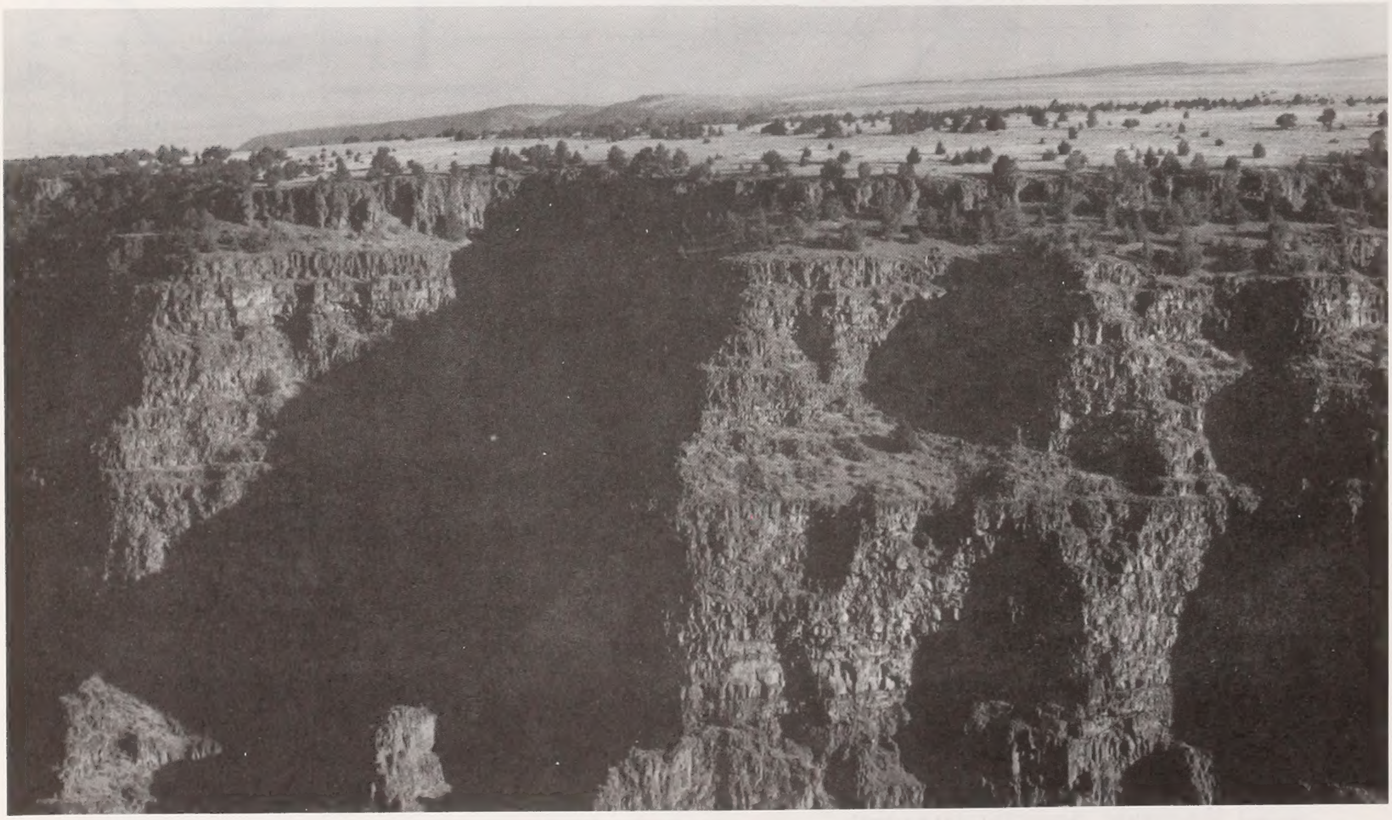
SPECIAL FEATURES

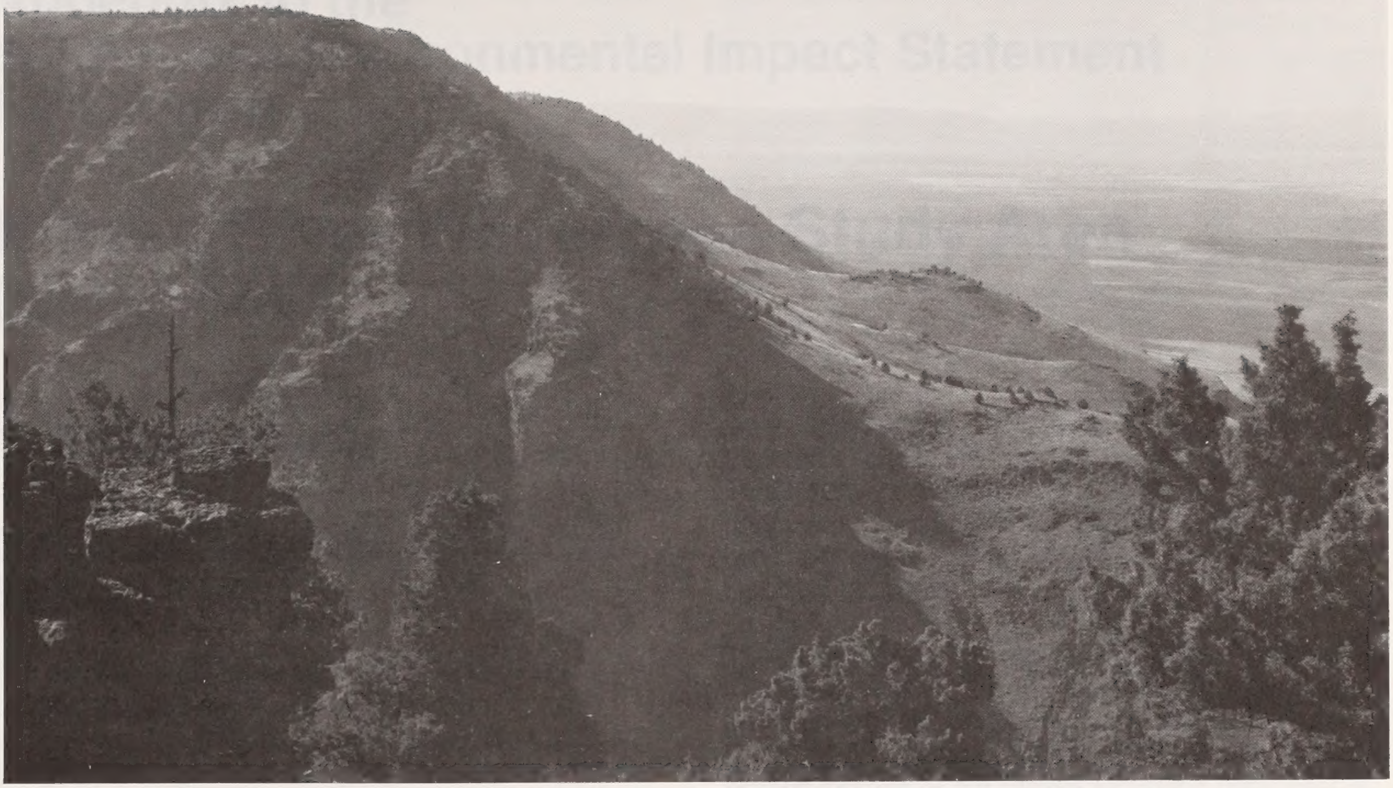
1 0 1 2 MILES

MAP 5

Home Creek WSA, OR-2-85H. This is a view of Home Creek Canyon looking west nearly three miles into the study area near Home Creek Butte. Everything in this view is within the suitable area under the partial (proposed action) alternative. The juniper and sagebrush vegetation in combination with the topographic diversity and scenic quality of the area enhance the opportunities for solitude and recreation. September 1983.



Home Creek WSA, OR-2-85H. Looking north from the south side of Home Creek Canyon. Within the area suitable under the partial (proposed action) alternative. This view shows the basalt layers which form the Steens Mountain fault block, and the plateau east of the Catlow Rim. September 1983.



Home Creek WSA, OR-2-85H. The mouth of Home Creek Canyon looking east from the western boundary. The area suitable under the partial (proposed aciton) alternative begins at the base of the rim. The rugged canyon walls rise 1400 feet from this point along the western boundary, and provide high quality habitat for a variety of raptor species. June 1983.

Home Creek WSA, OR-2-85H. This view from the northeastern boundary, looking southwest, shows the relative flatness of this part of the study area. Home Creek Butte and Home Creek Canyon are visible on the horizon on the left, while Dry Creek Canyon can be seen on the right. All of the area shown is suitable under the partial (proposed action) alternative. The easterm three-quarters of the WSA is a gently rolling plateau. September 1983.

Appendix to the Wilderness Environmental Impact Statement for Oregon

Blitzen River Wilderness Study Area (OR-2-86E)

1. Introduction

General Description of the Study Area

The Blitzen River Wilderness Study Area (WSA) is located 60 miles south of Burns (less than 1 mile south of Frenchglen), in Harney County (see Map 1). The WSA is adjacent to Oregon State Highway 205.

The Blitzen River WSA is irregularly shaped and contains 55,880 acres of public land (see Map 2). Two inholdings are also included within the study area's boundary. On the western side of the river is one 40-acre parcel of private land. On the east side of the WSA is one 640-acre parcel of private land. The study area also contains 2,070 acres of split-estate lands.

The area is approximately 12 miles from north to south and 15 miles from east to west. The study area's boundary line is formed by a variety of features. On the north, most of the boundary line is formed by the northern portion of the Steens Mountain Loop Road which is a high standard gravel road. In addition, private land, a portion of the Malheur National Wildlife Refuge and a small segment of State Highway 205 form the remainder of the northern boundary line.

A portion of the eastern boundary line lies adjacent to private land and public lands. Small sections of road, which generally serve private landowners, also form part of the eastern boundary. On the south, the boundary line is formed by the southern portion of the Steens Mountain Loop Road, several other BLM roads and several parcels of private land. The western boundary line generally follows a powerline, although a parcel of private land also occurs on this side of the area. All boundary roads, with the exception of the Steens Mountain Loop Road and Highway 205 are low standard dirt roads.

Seven dead-end roads, totaling 15 miles, penetrate the area and also form part of the boundary line. Three of these roads enter the study area from the north, while two roads enter from the southwest and two roads enter from the southeast. All are low standard dirt roads.

The WSA is a rolling, sloping, high desert plateau. The area contains a variety of topographic features, ranging from the dominant features of the Donner und Blitzen River Canyon and Fish Creek Canyon, to the sloping foothills of the Steens Mountain ridge east of the river, to the deeply-cut, rock-rimmed ridges on the west side of the river.

One of the main features of the study area, the Donner und Blitzen River, winds its way through the WSA from south to north for approximately 16 river miles and divides the area in half. At one point, the western wall of the canyon rises 600 feet above the river; however, the normal depth of the rocky canyon is 300 to 400 feet. The study area reaches its lowest elevation, 4,240 feet, at the mouth of the Blitzen River Canyon on the northern edge of the WSA. At its widest point, this canyon is 0.5 mile wide, although the average width is about 0.25 mile.

Fish Creek and the Little Blitzen River, like the Blitzen River, are also perennial streams which drain the higher elevations of Steens Mountain. Fish Creek is located on the eastern side of the river and flows about 6 miles to the west until it intersects the Blitzen River in the north-central portion of the WSA. Fish Creek also flows through a steep-walled canyon which ranges in depth from about 200 feet, where the drainage enters the WSA on the eastern boundary, to 400 feet where the creek merges with the Blitzen River. Fish Creek averages 0.25 mile in width.

On the east side of the river, the topography of the study area, which is gently rolling and sloping, includes the upper-elevation western foothills of Steens Mountain. It is near the eastern boundary that the

WSA reaches it highest elevation of nearly 7,400 feet. To the west of a ridgeline which parallels the western side of the Blitzen River the terrain is flatter and more open.

The study area contains a variety of vegetation, including mountain mahogany and numerous riparian species in the canyons. On the flatter terrain and foothills, big sagebrush and low sagebrush occur. Scattered patches of juniper grow throughout the WSA, but the junipers are most heavily concentrated within the central and northeastern portions of the area. Large aspen groves occur at the higher elevations in the eastern portion of the WSA.

Interrelationships

Adjacent to the Blitzen River WSA on the north, east and south are three other study areas. All three are separated from the Blitzen River WSA by roads. On the east, a road which serves as access to public and private lands separates the study area from the Little Blitzen Gorge WSA (OR-2-86F). The northern portion of the Steens Mountain Loop Road divides the study area from the Bridge Creek WSA (OR-2-87) to the north, while the southern portion of the Loop Road forms the boundary between the Blitzen River WSA and the South Fork of the Donner und Blitzen River WSA (OR-2-85G) to the south. Both sections of the Loop Road have been constructed and maintained by BLM. The road is heavily used by livestock permittees for access to summer range, by BLM employees for administrative purposes, by landowners for access to private parcels and by recreationists for access to the upper elevations of Steens Mountain.

Most of the Blitzen River WSA is included within an area designated by BLM as the Steens Mountain Recreation Lands. The recreation lands were established in 1971, with the cooperation of local groups and government entities, as well as private landowners. The purpose of the designation was to maintain a multiple-use management concept while protecting the existing natural condition of the mountain.

A portion of the Desert Trail, which is a component of the Oregon State Recreation Trails System, crosses the Blitzen River WSA. BLM and the Desert Trail Association have joined in a cooperative management agreement to share responsibilities for developing and maintaining the trail.

The WSA is located within the ODFW's Steens Mountain Wildlife Management Unit, which contains 1,916 square-miles of land. The WSA supports a summer population of an estimated 750 deer, 100 antelope and 15 elk, and a winter population of 1,500 deer, 25 antelope and 10 elk. ODFW's management objective is for 11,000 deer within the entire management unit. ODFW has not set management objectives for antelope and elk. The ODFW goal for nongame wildlife is to maintain populations of naturally-occurring species at self-sustaining levels. ODFW conducts summering antelope and wintering deer herd composition counts by low-level aerial flights. The proposed action for this WSA conforms with ODFW's management objectives for game and nongame wildlife species.

BLM maintains one exclosure along 6 miles of the Blitzen River in the WSA. ODFW has a management objective to manage for wild trout in the Blitzen River, from the gauging station located 2 miles south of the northern edge of the WSA, upstream. Fish Creek is also to be managed for wild trout. ODFW annually stocks rainbow trout at Page Springs Campground, which is located outside of the WSA. However, some of these trout move upstream into the WSA.

BLM, in conjunction with ODFW, conducts fish studies on the Blitzen River within the study area. The purpose of these studies is to assess and monitor aquatic habitat through fish populations. Helicopters are the primary means of access to these streams, but vehicles are also used.

The U. S. Department of Agriculture (USDA) conducts a predator control program to reduce predation of livestock, wintering deer and aquatic birds on nearby Malheur National Wildlife Refuge by aerially eliminating coyotes.

A portion of the WSA, including all of the public land along the Blitzen River south of Fish Creek, is in a power site reserve which identifies the land for potential water power and water storage development. The "reserve" is scheduled for review in the next few years, which may lead to its revocation. Power site development is not foreseen, and therefore, is not discussed further.

The southwest part of the WSA is in the South Steens wild horse Herd Management Area (HMA). Management of the HMA would not be significantly affected by any of the alternatives, and therefore, is not discussed further.

The portion of the Donner und Blitzen River flowing through the WSA is part of a 73-mile segment of the river that has been designated a wild river component of the National Wild and Scenic Rivers System. The federal designation withdraws from mineral location and leasing all public lands within 0.25 mile on each side of the river (approximately 4,960 acres in the WSA).

The restrictions for the Wild and Scenic River designation would continue to apply within the WSA whether or not the area is designated wilderness.

Harney County has not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study and EIS planning, scoping and public review process. These issues concern both the effects of wilderness designation on existing and potential lands uses or resources in the WSA, as well as the effects of existing and potential land uses or resources on wilderness values. Land uses or resources raised as issues specifically for this WSA include:

- impact on the existing designation of the area as part of the Steens Mountain Recreation Lands (the designation would not be affected, but the management plan for the recreation lands would need revision),
- impact on the area's wilderness values,
- impact on fish populations in Donner und Blitzen River and Fish Creek, the area's big game populations and opportunities to improve wildlife habitat, impact on energy and mineral exploration and development,
- impact on proposed livestock improvements, and,
- impact on recreation use levels and vehicle-oriented recreation.

No other issues specific to this WSA were raised by the BLM or the public.

2. Description of the Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness study area can be made.

The following alternatives are analyzed:

- all wilderness
- enhanced wilderness
- proposed action
- partial
- no wilderness/no action

The possibility of combining the Blitzen River WSA with the three adjacent study areas is not analyzed under the enhanced wilderness alternative. The boundary roads on the north and south, which separate the Blitzen River WSA from two other study areas, are important access routes on Steens Mountain, providing access to recreationists, private landowners, livestock operators and BLM personnel. Closing the roads is not considered feasible.

The merger of the Blitzen River area with the Little Blitzen Gorge WSA (OR-2-86F) to the east is not analyzed because the road that separates these two WSAs provides necessary access to multiple-use public lands and private parcels along the north rim of Little Blitzen Gorge. Also, combining the areas would not substantially enhance manageability or wilderness values of either of the WSAs, because the shared portion of the boundary line is far from the anticipated areas of primary recreation use of both study areas.

All Wilderness

The all wilderness alternative would recommend all 55,880 acres of public land in the Blitzen River WSA suitable for wilderness designation (see Map 2). For purposes of analysis, it is assumed that none of the private lands or mineral estate of split-estate lands within the study area would be acquired. The seven dead-end roads, totaling 15 miles, would remain open.

Energy and Mineral Development Actions

Wilderness designation would close 48,850 acres of public land within the WSA to all forms of appropriation under the mining and mineral leasing laws. In this alternative, approximately 4,960 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships. There are no energy resources with moderate or high potential for occurrence in the WSA.

Indirect evidence indicates a moderate potential for the occurrence of copper, gold, mercury, molybdenum and silver throughout the entire WSA. Direct evidence indicates a high potential for the occurrence of these minerals on a 250-acre parcel of public land located on the extreme eastern edge of the WSA. There are no known developable deposits of these commodities and no mining claims within the WSA.

Due to the thick basalt lava flow covering the area, exploration is generally restricted to limited surface protrusions of suitable geologic structures or to relatively-deep inaccessible canyons where the basalt cover has been eroded. It is postulated, therefore, that only casual exploration for mineral resources would occur on the split-estate or private lands under this alternative.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management objectives and to be consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. A 1.9-mile riparian fencing project is proposed for riparian habitat protection and enhancement along 1.4 miles of upper Fish Creek. Access for annual maintenance of the Blitzen River riparian fence is by vehicle via dead-end roads.

Livestock Management Actions

Livestock grazing use would remain at the current estimated level of approximately 4,561 AUMs within the portions of the three grazing allotments located within the WSA. The seasons of use and distribution of AUMs for all three allotments are as shown in Table 4.

Vehicle use for livestock management on 48 miles of ways would be precluded. Management of livestock and maintenance of 33 miles of fence would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years to maintain the 52 existing reservoirs, one spring development and a 2-mile irrigation ditch.

Recreation Management Actions

The entire 55,880 acres (excluding 15 miles of dead-end roads) would be closed to motorized vehicle use. This action would close 48 miles of ways. Presently, vehicle use is limited to the existing 15 miles of roads and 48 miles of ways. (An off-highway vehicle designation within the Steens Mountain Recreation Lands prohibits vehicle use of approximately 10 miles of ways.) Current recreational use is estimated to be 1,800 visitor days per year. Most of the current use utilizes vehicles for access into the area via existing dead-end roads and ways.

Enhanced Wilderness

The enhanced wilderness alternative would recommend all 55,880 acres of public land in the Blitzen River WSA suitable for wilderness designation (see Map 3). An additional 2,250 acres of public land located outside of the WSA, along the eastern and southeastern side, would be included within the acreage designated wilderness. Also, an attempt would be made to acquire the mineral estate of 2,070 acres of split-estate land and 1,110 acres of private lands in and adjacent to the WSA, through purchase or exchange with willing landowners. Assuming acquisition of the private lands, the total area recommended suitable under this alternative would be 59,240 acres.

The acquisitions would result in boundary adjustments along the southeastern and western boundary lines. The seven dead-end roads, totaling 17 miles in length, and the 51 miles of ways would be closed under this alternative.

Energy and Mineral Development Actions

Wilderness designation would close 47,410 acres of public land within the WSA, and an additional 2,250 acres of public land adjacent to the WSA, to all forms of appropriation under the mining and mineral leasing laws. If acquisition is successful, 2,070 acres of split-estate land and 1,110 acres of private land would also be closed to mineral entry, for a total of 52,840 acres. In this alternative, approximately 6,400 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships.

Wildlife Habitat Management Actions

Habitat within the study area would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with the guidelines established in BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. A 1.9-mile riparian fencing project is proposed for habitat enhancement and protection along 1.4 miles of Fish Creek; however, the project would not be constructed under this alternative because road closures would preclude needed vehicle access. Access for annual maintenance of the Blitzen River riparian fence would be on foot or by horseback.

Livestock Management Actions

Livestock grazing use would remain at the current estimated level of approximately 4,561 AUMs within the portions of the three grazing allotments located within the WSA. The seasons of use and distribution of AUMs for all three allotments are as shown in Table 4. Vehicle use for livestock management on 48 miles of ways and 17 miles of dead-end roads would be precluded. Management of livestock and maintenance of 35 miles of fence would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years to maintain the 59 existing reservoirs, one spring development and a 2-mile irrigation ditch.

Recreation Management Actions

The entire 59,240 acres, including 17 miles of dead-end roads and 51 miles of ways, would be closed to motorized vehicle use. Under a current off-highway vehicle designation within the Steens Mountain Recreation Lands, 10 miles of ways are closed and the remainder of the area is limited to existing roads and ways. Current recreational use is estimated to be 1,800 visitor days per year. Most of the current recreational use utilizes vehicles for access into the area via existing roads and ways.

Proposed Action

The proposed action would recommend 21,670 acres of public land suitable for wilderness designation (see Map 4). The remaining 34,210 acres of the study area would be recommended as nonsuitable. The alternative recommends that all or part of four roads, totaling 8 miles, (two on the northeast, one on the southeast and one on the west) would be closed to vehicle use. Also under this alternative an attempt would be made to acquire 100 acres of private land and the mineral estate of 1,115 acres of split-estate land within the WSA, through purchase or exchange with willing owners. In addition, approximately 300 acres of public land (including 3 miles of the Blitzen River) would be added to the wilderness area on the southern boundary. Assuming acquisition of the inholdings of private land, and addition of the public land outside of the WSA, the total area recommended suitable under this alternative would be 22,070 acres.

Several boundary adjustments would be made under this alternative. While the northeastern boundary would remain the same, basically following the Steens Mountain Loop Road (a high standard gravel road), the remainder of the WSA boundary would be substantially altered.

Most of the public land recommended as nonsuitable under this alternative lies to the west of the Donner und Blitzen River Canyon. The proposed boundary on the west would begin just west of the Page Springs Campground on the northern side of the area. The boundary would follow 4 miles of low standard dirt dead-end road, which parallels the western rim of the river canyon. At the end of the road, the boundary would turn west along a small drainage until it reached the 5,200-foot elevation contour (about 0.5 mile). Most of the remainder of the boundary line would follow this contour until it merged with the top of the rim on the western side of the canyon, where it would follow the rim until it reached the private land on the southern end of the WSA. The 25,765 acres on the western side of the WSA would be recommended nonsuitable.

The proposed action also recommends major boundary adjustments on the southeast. After following private land on the south, where the Blitzen River enters the study area, the boundary would then go north along a way and a low standard dirt road until it intersected a large private parcel on the boundary. Following legal subdivisions, the boundary would skirt this parcel of private land (and some public land) until it reached the southern rim of Fish Creek Canyon.

Within this portion of the proposed action, one low standard dirt dead-end road, about 1 mile in length, would be closed. The remainder of the southeastern boundary would follow the southern rim of the canyon (crossing private land in two locations) east to where Fish Creek enters the study area along the existing WSA boundary line. Some 6,985 acres of public land on the southeastern side of the WSA would be recommended as nonsuitable for wilderness. This would avoid potential manageability problems with the private lands on this side of the area and would generally provide a more identifiable boundary along roads, ways and rims.

The land uses expected within the portions of the WSA recommended as nonsuitable include continued use of the area for livestock grazing, development of range improvements for grazing and possible mineral exploration and development. The seasonal restrictions on the use of vehicles and the closure of selected vehicle ways, as designated by the Steens Mountain Recreation Plan, would continue, involving approximately 10 miles of ways.

Energy and Mineral Development Actions

Wilderness designation would close 15,595 acres of public land within the WSA to all forms of appropriation under the mining and mineral leasing laws. In this alternative, approximately 4,960 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships. If acquisition is successful, 1,115 acres of split-estate land and 100 acres of private land would also be closed to mineral entry, as well as the 300 acres of public land added to the wilderness area on the southern boundary, for a total of 17,110 acres. Under this alternative, 33,770 acres of the remaining 34,210 acres in the nonsuitable portion would remain open to mineral exploration and development.

There are no energy resources with moderate or high potential for occurrence in the WSA.

Indirect evidence indicates a moderate potential for the occurrence of copper, gold, mercury, molybdenum and silver throughout the WSA, while direct evidence indicates a high potential for the occurrence of these minerals on a 250-acre parcel of public land located on the extreme eastern edge of the WSA. This parcel lies in the nonsuitable area under this alternative. There are no known developable deposits of these commodities in the WSA and there are no mining claims.

Due to the thick basalt lava flow covering the area, exploration is generally restricted to limited surface protrusions of suitable geologic structures or to deep and relatively inaccessible canyons where the basalt cover has been eroded away. It is postulated, therefore, that only casual exploration for mineral resources would occur on lands recommended nonsuitable under this alternative.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management objectives and in the suitable portion, consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. A 1.9-mile riparian fencing project for riparian habitat protection and enhancement along 1.4 miles of Fish Creek would not be constructed because road closures precluding vehicles would make maintenance of this project difficult.

In the nonsuitable area, the proposed habitat improvement project at Kundert Reservoir would be constructed, providing a 30 surface-acre impoundment suitable for stocking with fish. Access for annual maintenance of the Blitzen River riparian fence would continue to be on foot and by vehicle.

Livestock Management Actions

Livestock grazing use would remain at the current estimated level of approximately 4,561 AUMs within the portions of the three grazing allotments located within the entire WSA. The seasons of use and distribution of AUMs for all three allotments are as shown in Table 4.

Vehicle use for livestock management on 8 miles of ways and 8 miles of roads would be precluded. Management of livestock and maintenance of 33 miles of fence would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years for the maintenance of 19 existing reservoirs and one spring development.

In the nonsuitable area, one spring development, one waterhole and 2 miles of fence would be constructed in order to improve livestock distribution and protect riparian habitat. Vehicle use for livestock management and maintenance would continue on the 7 miles of roads and 40 miles of ways.

Recreation Management Actions

The 22,070 acres recommended suitable for wilderness (assuming acquisition of 100 acres of private land) and all or parts of four roads (two on the northeast, one on the southeast and one on the west), totaling 8 miles, would be closed to motorized vehicles, as well as 8 miles of ways. The 34,210 acres in the nonsuitable area would remain limited by vehicle designation to the 7 miles of existing roads and 40 miles of existing way. Presently, an off-highway vehicle designation within the Steens Mountain Recreation Lands limits vehicle use to existing roads and ways. Current annual recreation use of the WSA is estimated to be 1,800 visitor days. Most current recreation use utilizes vehicles for access to the area via the existing roads and ways.

Partial

The partial alternative would recommend 8,735 acres of public land suitable for wilderness designation and 47,145 acres of public land nonsuitable (see Map 5). Under this alternative a portion (about 1 mile) of a road which enters the WSA from the west would be closed. In addition, an attempt would be made to acquire one 100-acre parcel of private land, and the mineral estate of 620 acres of split-estate land. Assuming acquisition of private land, the total area recommended suitable for wilderness designation would be 8,835 acres.

Under this alternative, 1 mile of road and 1 mile of way would be closed.

Substantial boundary adjustments would be recommended under this alternative. The partial alternative primarily recommends only the central core of the WSA, the Blitzen River Canyon and Fish Creek Canyons, be designated wilderness.

The boundary recommendation on the western side of the WSA is the same as that described in the proposed action, following a low standard dirt road, a contour line and the rim of the Blitzen River Canyon. On the southeastern side of the WSA, the boundary would follow the eastern rim of the Blitzen River Canyon and the southern rim of Fish Creek Canyon. On the eastern side of the study area, where Fish Creek enters the WSA, the boundary would follow the legal subdivision between public and private land. Much of the northeastern corner of the WSA would also be recommended nonsuitable under this alternative. The boundary on this side of the study area would follow the northern rim of Fish Creek Canyon for over 4 miles, then north along a legal subdivision (less than 1 mile) until it intersected one of the low standard dirt dead-end roads which enters this portion of the study area. The boundary would then follow this road until it reached the existing boundary line on the North Loop Road, a standard gravel road.

In recommending only the core of the area suitable for wilderness designation, the partial alternative would minimize the potential manageability problems associated with private and split-estate lands and reduce the conflicts with range improvement projects proposed in the area recommended nonsuitable. In addition, the alternative would substantially reduce the effect of numerous ways and reservoirs on a visitor's perception of naturalness and solitude.

Under this alternative, the lands recommended as nonsuitable for wilderness would continue to be managed primarily for multiple use and would be subject to construction of range improvements or potential mineral exploration and development. Vehicle use restrictions under the Steens Mountain Recreation Plan would remain in effect, involving approximately 10 miles of ways.

Energy and Mineral Development Actions

Wilderness designation would close 2,355 acres of public land within the Blitzen River WSA to all forms of appropriation under the mining and mineral leasing laws. In this alternative, approximately 5,760 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships. If acquisition is successful, 620 acres of split-estate land and 100 acres of private land would also be closed to mineral entry, for a total of 3,075 acres.

A total of 46,505 acres within the 47,145 acres recommended as nonsuitable would remain open to mineral exploration and development.

There are no energy resources with moderate or high potential for occurrence in the WSA.

Indirect evidence indicates a moderate potential for the occurrence of copper, gold, mercury, molybdenum and silver throughout the WSA, while direct evidence indicates a high potential for the occurrence of these minerals on a 250-acre parcel of public land located on the extreme eastern edge of the WSA. This parcel lies in the nonsuitable area, under this alternative. There are no known developable deposits of these commodities in the WSA and there are no mining claims. Due to the thick basalt lava flow covering the area, exploration is generally restricted to limited surface protrusions of suitable geologic structures, or to deep and relatively inaccessible canyons where the basalt cover has been eroded away. It is postulated, therefore, that only casual exploration for mineral resources would occur on the lands recommended nonsuitable.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and in the suitable area, consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. A 1.9-mile riparian fencing project is proposed for riparian habitat protection and enhancement along 1.4 miles of upper Fish Creek. Most of this fence would be outside of the boundary of the area recommended suitable, but a small portion of the fence (approximately 300 yards) would be constructed within the area recommended suitable. It is needed to keep livestock out of Fish Creek. Vehicle access would be allowed in the nonsuitable area. Also in the nonsuitable area, the proposed habitat improvement project at Kundert Reservoir would be constructed providing a 30 surface-acre impoundment suitable for stocking with fish. Access for annual maintenance of the Blitzen River riparian fence would continue to be on foot or by vehicle.

Livestock Management Actions

Livestock grazing use would remain at the current estimated level of approximately 4,561 AUMs within the portions of the three grazing allotments located within the entire WSA. The seasons of use and distribution of AUMs for all three allotments would be as shown in Table 4.

Vehicle use for livestock management and maintenance of 9+miles of fence on 1+mile of way and 1+mile of dead-end road would be precluded. Mechanized heavy equipment would be used on the average of once every 10 years to maintain the four existing reservoirs.

Within the area recommended as nonsuitable for wilderness designation, three spring developments, three reservoirs, one waterhole and 2 miles of fence would be constructed to improve range management and overall livestock distribution. Vehicle use for livestock management and maintenance would continue on 14 miles of roads and 47 miles of ways.

Recreation Management Actions

The 8,835 acres recommended suitable (assuming acquisition of 100 acres of private land), including 1 mile of way and 1 mile of dead-end road, would be closed to motorized vehicle use. In the area recommended nonsuitable, vehicle use would continue on 14 miles of roads and 47 miles of ways. Also in the nonsuitable area, 10 miles of existing ways are closed under an off-highway vehicle designation associated with the Steens Mountain Recreation Lands. Current recreational use for the entire WSA is estimated to be 1,800 visitor days per year. Most of this recreational use utilizes motorized vehicles for access via existing roads and ways.

No Wilderness/No Action

The no wilderness/no action alternative would recommend the entire WSA nonsuitable as wilderness. This represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

A total of 50,920 acres of land within the WSA would be open to mineral and energy exploration and development. The mineral withdrawal on approximately 4,960 acres, as described in Section 1 under Interrelationships for the Wild and Scenic River designation, would continue to apply within the WSA. There are no energy resources with moderate or high potential for occurrence in the WSA. Indirect evidence indicates a moderate potential for the occurrence of copper, gold, mercury, molybdenum and silver throughout the WSA, while direct evidence indicates a high potential for the occurrence of these minerals on a 250-acre parcel of public land located on the extreme eastern edge of the WSA. There are no known developable deposits of these commodities in the WSA and there are no mining claims. Due to the thick basalt lava flow covering the area, exploration is generally restricted to limited surface protrusions of suitable geologic structures or to deep and relatively inaccessible canyons where the basalt cover has been eroded away. It is postulated, therefore, that only casual exploration for mineral resources would occur.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management objectives. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife. A 1.9-mile riparian fencing project is proposed for construction for riparian habitat protection and enhancement along 1.4 miles of upper Fish Creek. The proposed habitat improvement project at Kundert Reservoir would be constructed to provide a 30 surface-acre impoundment suitable for stocking with fish. Access for annual maintenance of the Blitzen River riparian fence would continue to be on foot or by vehicle.

Livestock Management Actions

Livestock grazing use would remain at the current estimated level of approximately 4,561 AUMs within the portions of the three grazing allotments located within the WSA. The seasons of use and distribution of AUMs for all three allotments would be as shown in Table 4.

Three spring developments, five reservoirs, a watering hole and 2 miles of fence would be constructed to improve livestock distribution and range management and protect spring resources.

Vehicle use for livestock management and maintenance of the existing 33 miles of fence, 52 reservoirs, 1 spring development and a 2-mile irrigation ditch would continue on the existing 48 miles of ways and 15 miles of dead-end roads.

Recreation Management Actions

Vehicles would continue to utilize the existing 15 miles of dead-end roads and 48 miles of ways throughout the WSA. The off-highway vehicle designation associated with Steens Mountain Recreation Lands has closed 10 miles of ways to motorized vehicle use and limits motorized vehicle use to existing designated roads and ways. Current recreation use is estimated to be 1,800 visitor days per year. Vehicles are the primary means to gain access for recreational pursuits in the WSA.

Summary

Table 1 summarizes the projected management actions under each alternative.

Table 2 summarizes the environmental consequences of each alternative.

3. Affected Environment

This section discusses only those activities or resources which influence the character of the study area, or that may be affected by the alternatives.

Wilderness Values

Naturalness

The study area appears to be in a basically natural condition. The unnatural features within the boundary, and those which affect the area from outside the WSA, do not have an overwhelming influence on the naturalness of the WSA.

The study area contains 84 unnatural features and includes 54 water developments consisting of 52 reservoirs, 1 developed spring, a 2-mile irrigation ditch, 12 fences totaling 33 miles and 18 vehicle ways totaling approximately 58 miles. It is estimated that approximately seven percent of the study area is influenced by these features.

On the west side of the river, there are 22 water developments, including the irrigation ditch. The reservoirs are fairly large and have a much greater influence than developments on the east side of the river. On the west side of the study area, the drainages flow through fairly wide valleys bounded by plateaus. The developments often occur in these drainages and are quite visible from most of the higher elevations which surround them.

There are 32 water developments, including one spring, on the east side of the river. However, the increased amount of vegetative screening (juniper), the small size of most of the developments and the location of many of the reservoirs (high on gentle sideslopes) reduces the visual influence of the developments.

Vehicle ways within the WSA also have a stronger influence on the naturalness of the west side of the river than they do on the east side. This is partly because 40 of the 58 miles of ways are on the western side of the area, but topography is also a factor. The ways on the west side of the river are in the broad valleys of the drainages and because most of these drainages are between higher plateaus and ridges, the vehicle tracks are visible from a much greater distance. The ways on the east side are located in shallow drainages or on the crest of a ridge. In addition, juniper screens more of the developments on the east side than it does on the west side.

Although the fences are somewhat more concentrated on the west side of the WSA, they are generally screened by vegetation or topography and do not have a substantial visual influence on any particular portion of the WSA.

Outside developments influencing the naturalness of the study area are few. These developments include four small reservoirs along the western boundary, the roads which surround most of the WSA, the Page Springs Campground and a powerline which forms part of the northwestern boundary line. The powerline has the greatest influence on naturalness in the study area as it is visible from a number of areas on the northwest side of the WSA.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

Opportunities for solitude within the study area are outstanding. The area contains a substantial amount of topographic and vegetative screening. The Blitzen River Canyon and Fish Creek Canyon, along with junipers and aspen groves, enhance the opportunity for a visitor to find a secluded spot. There are small portions of the WSA, mostly near the western boundary, where finding seclusion would be difficult because there is a lack of topographic or vegetative screening.

Opportunities for primitive recreation activities are outstanding within the WSA, including day hiking, camping, backpacking, horseback riding, hunting, fishing, observing wildlife, sightseeing and photography.

It is likely that the bulk of dayhiking would originate from the Page Springs Campground area (outside of the WSA along the northern boundary) and would be concentrated in the northern portions of the Blitzen River Canyon. The high canyon walls and perennial stream of the Blitzen River Canyon offer an enjoyable and relatively easy hike along the river bottom. Several small, steep, side drainages provide challenging opportunities for leaving the canyon and returning via a different route.

Primary attractions for backpacking and camping are likely to be the drainages of the Blitzen River and Fish Creek. The steepness of the canyons provide a challenge for visitors trying to leave or enter the canyons from side drainages. Additionally, the water and riparian vegetation create an enjoyable atmosphere for hiking. The gentleness of the river bottom terrain and the presence of vegetative cover provide excellent opportunities for visitors to find suitable places for camping. The availability of water within this area is limited, the only dependable sources being Fish Creek and the Donner und Blitzen River.

There are also outstanding opportunities for horseback riding. The gentleness of most of the terrain would provide relatively easy access to the majority of the WSA.

Opportunities for hunting, especially mule deer, are considered excellent. The WSA is located within the summer ranges of deer and antelope. There are also opportunities for hunting chukar and waterfowl along the lower Blitzen River.

Opportunities for fishing on the Donner und Blitzen River and Fish Creek are outstanding. The river and its upstream tributaries are managed entirely for wild trout. This area is attractive to anglers due to its remoteness and excellent angling for large trout.

Special Features

Features in the Blitzen River WSA which add to the value of this area for wilderness include scenic quality and wildlife.

The area's scenery is outstanding, particularly in Blitzen River Canyon and Fish Creek Canyon and in the areas of aspen groves and meadows on the east side of the area. The topography of the WSA offers spectacular scenery with steep, rugged canyons and adjacent ridgelines covered by a combination of juniper and sagebrush, intermixed with outcroppings of dark basalt rock, offer spectacular scenery.

Special wildlife features found in the study area include a sage grouse strutting ground, crucial deer winter range, redband trout habitat and a raptor nesting area (see Map 7).

The sage grouse strutting ground is located near the northern boundary. This is an area where the sage grouse conduct an extensive courtship dance prior to mating. The same area is often used year after year and the birds usually nest within a 2-mile radius of the strutting ground. Sage grouse is a candidate for Federal listing under the Endangered Species Act.

Crucial deer winter range is found in the northeastern part of the study area. Yearlong summer range for both deer and antelope is found throughout the WSA.

The WSA contains redband trout, a native fish with limited range. Redband trout is a candidate for Federal listing under the Endangered Species Act.

Raptor nesting habitat is located in the Blitzen River Canyon, as well as portions of Fish Creek Canyon.

Diversity in the National Wilderness Preservation System

According to the Bailey-Kuchler system of classifying ecosystems, the study area is in the Intermountain Sagebrush Province and the potential natural vegetation is sagebrush-steppe.

Plant communities identified in the Basin and Range section of the Oregon Natural Heritage Plan which occur in this study area are big sagebrush/Idaho fescue, big sagebrush/bluebunch wheatgrass and low sagebrush/Sandberg's bluegrass. Western juniper-dominated communities are western juniper/big sagebrush/Idaho fescue, western juniper/low sagebrush/Sandberg's bluegrass and western juniper/bluebunch wheatgrass. Mountain mahogany in the southern Basin and Range Province, snowbrush and bittercherry community complex and aspen groves are the other plant communities in the area.

The study area is within five hours' driving time of one standard metropolitan statistical area with a population over 100,000: Boise, Idaho.

Energy and Mineral Development

The geology, energy and mineral resources of the Blitzen River WSA were evaluated by interpreting and reviewing existing literature, reviewing mining claims and mineral leasing records and mining or mineral occurrences. Additional information pertaining to the mineral resources of the WSA come from the State of Oregon's Department of Geology and Mineral Industries (DOGAMI) geochemical survey of the area.

The WSA is within the Steens Mountain Geologic Resources Area (GRA), which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level). A description of the rating system is provided in the Statewide EIS volume.

Table 3 shows the energy and mineral classifications in the study area. Map 6 shows where energy and mineral resources have moderate or high potential for occurrence in the WSA.

Surface rocks in the WSA are predominantly Steens basalt, which consists of thin, multiple flows of basalt and andesite approximately 15 million years old. Thin patches of rhyolite ash-flow tuffs occur sporadically throughout the area.

Energy Resources

Based on indirect evidence, the entire WSA is considered to have a low potential for the occurrence of energy resources. The WSA contains no energy leases as of October 16, 1987.

Mineral Resources

The entire WSA is rated as having a moderate potential for the occurrence of copper, gold, mercury, molybdenum and silver based on indirect evidence. Direct evidence indicates a high potential for the occurrence of these minerals on a 250-acre parcel of public land located in the extreme eastern edge of the WSA.

There are no records of mineral occurrences. Assay results from DOGAMI's geochemical survey show anomalies of manganese, mercury and copper throughout the WSA as well as silver, zinc, cobalt and barium anomalies. With the exception of barium, these are strategic and critical minerals; however, there are no known ore bodies or deposits of strategic and critical minerals in the WSA. As of October 16, 1987, there were no mining claims within the WSA.

Vegetation

The most extensive community in the Blitzen River WSA is low sagebrush/ bunchgrass. This community occurs all across the flat, rocky plateau west of the Blitzen River and, to a lesser extent, east of the river. Many areas have been heavily invaded by western juniper and in these areas western juniper is dominant. The estimated ecological status is mid- to late seral. The potential natural community is low sagebrush, Sandberg's bluegrass, and, in some areas, bluebunch wheatgrass or Idaho fescue.

Scattered throughout the low sagebrush community are small juniper-covered rock outcrops. The estimated ecological status is mid- to late seral. The primary potential natural community species are western juniper and bluebunch wheatgrass.

A big sagebrush/bunchgrass community occurs throughout the study area on areas with deeper soils. The big sagebrush community on the slopes of Steens Mountain has been heavily invaded by western juniper, which dominates these sites. The estimated ecological status is mid-seral. The primary potential natural community species are big sagebrush and bluebunch wheatgrass or Idaho fescue.

The other major plant community is the western juniper-dominated sites associated with the steep, rocky canyons of Blitzen River, Fish Creek and other streams. The estimated ecological status is late seral. The primary potential natural community species are bluebunch wheatgrass, western juniper and big sagebrush on the south slopes, with Idaho fescue replacing bluebunch wheatgrass on the north slopes.

Other communities present to a lesser extent are mountain mahogany, aspen groves, meadows and riparian areas. Mountain mahogany occurs in scattered patches on the plateaus east of the Blitzen River. It also dominates sections of the north slope of Fish Creek and Spring Creek. The estimated ecological status is late seral. The primary potential natural community species are mountain mahogany and Idaho fescue.

Large aspen groves occur on small north slopes in the eastern portions of the WSA. The aspen groves have a limited understory of bluegrasses, mountain brome and shade-tolerant forbs. Associated with the aspens are meadows and shrub patches. Meadow vegetation species includes bluegrasses, sedges and forbs. The estimated ecological status of these areas is mid-seral. The primary potential natural community on the meadows is bluegrass and sedges, and in the aspen groves is aspen and associated shrubs.

Along Blitzen River and Fish Creek are large riparian communities. The primary species are willow, dogwood, alder, chokecherry and a wide variety of meadow grasses and forbs. The ecological status of these areas is 38 percent in early seral, 18 percent in mid-seral, 26 percent in late seral and 18 percent is classed as the potential natural community.

Wildlife

The WSA contains a variety of wildlife habitat with a diversity of animals.

Riparian habitat contains a rich variety of wildlife and is a prominent feature of the WSA. Riparian habitat is found along 24 miles of stream. Twenty-two of these stream miles in Blitzen River, the Little Blitzen River and Fish Creek are habitat for redband trout. Redband trout is a candidate species for Federal listing as threatened or endangered. Other fish species include mountain whitefish, long-nosed dace and mottled sculpin. Spotted frog, wandering garter snake, beaver, raccoon, valley quail, Lazuli bunting, yellow-breasted chat, yellow warbler, spotted sandpiper and Canada goose are a few of the species found in the riparian habitat along the Blitzen River, Little Blitzen River and Fish Creek. The conditions of trout habitat on public lands is 7.9 miles (36 percent) in poor condition, 0.7 miles (3 percent) in fair condition and 13.4 miles (61 percent) in good condition.

Talus and rimrocks along the streams and canyons provide habitat for western rattlesnake, sagebrush lizard, bobcat, bushy-tailed woodrat, canyon mouse, Great Basin pocket mouse, canyon wren, cliff swallow, chukars, big brown bat, little brown myotis (bat) and many other species. Raptors using the cliffs include golden eagles, American kestrels, red-tailed hawks and great horned owls. Other upland habitat varies greatly in vegetation and wildlife species.

Low-elevation low sagebrush and big sagebrush provide good habitat for antelope in the western half of the WSA. Mule deer summer east of the Blitzen River, and there is crucial deer winter range in the northern half of the WSA. Water, forage and cover are well interspersed, providing good habitat for deer. Rocky Mountain elk make light winter and summer use of the WSA.

Western rattlesnake, bullsnake, horned larks, common nighthawk, sage grouse, golden eagle, black-tailed jackrabbit, least chipmunk and coyote are a few of the other species using the sagebrush habitats.

One sage grouse strutting ground has been located in the northeastern part of the WSA. Sage grouse is a candidate species for Federal listing as threatened or endangered.

Common flicker, yellow-bellied sapsucker, mountain bluebird, American kestrel and red-tailed hawk all use junipers or their cavities for nesting. Common flicker, yellow-bellied sapsucker and other cavity nesters also use aspens.

Watershed

The WSA contains approximately 24 miles of perennial streams, composed of the Blitzen River, Fish Creek and the Little Blitzen River. The lower 5 miles of Blitzen River and the portion of the Little Blitzen River located in the WSA contain 5- to 6-foot cutbanks, which are presently healing due to livestock exclusion and grazing management. The overall area's water quality is fair to good.

Livestock Grazing

The WSA contains portions of three grazing allotments, which are the South Steens, Fish Creek-Big Indian and Frazier Field. Table 4 shows the existing livestock use in AUMs and the seasons of use for all three allotment portions within the WSA.

Existing range developments in the WSA include a spring development, a 2-mile irrigation ditch, 52 reservoirs and 33 miles of fencing.

Grazing operators frequently use motor vehicles on the 48 miles of ways and 15 miles of dead-end roads to distribute salt and to monitor livestock. Horses are used for gathering and moving livestock. The total vehicle use by livestock operators is estimated to be 10 trips per year.

Recreation Use

Recreation use in the Blitzen River WSA is oriented towards hunting and fishing. Primitive recreation activities include day hiking, backpacking and camping.

Mule deer hunting is very good throughout the WSA, while antelope hunting is good in areas west of the Blitzen River. Deer hunting use is high and antelope hunting use is low. Chukar hunting is moderate. In the fall of 1983, a controlled hunt for sage grouse was allowed, but there are no figures on the amount of visitor use associated with this hunt. A moderate amount of waterfowl hunting occurs along the Blitzen River, above Page Springs Campground. Most of the use occurs in the later months of the waterfowl season after better hunting areas freeze.

Outstanding fishing exists in the Blitzen River and a portion of Fish Creek. The area attracts a relatively large number of anglers because of the remoteness and excellent fishing for large trout. Most of the fishing activity occurs on the Blitzen River. Most hunting in the WSA is vehicle-oriented. Both deer and antelope hunters use vehicles on roads and ways throughout the WSA.

A current off-highway vehicle designation for Steens Mountain Recreation Lands has closed 10 miles of ways to motorized vehicle use and limited vehicle use to existing designated roads and ways.

Anglers, chukar hunters and waterfowl hunters use roads to approach Blitzen River and Fish Creek. Some fishing is associated with hikers along the river from the WSA boundary at Page Springs Campground.

Day hiking, backpacking and camping are the most common primitive recreation activities in the WSA. Use for these activities is high.

Current recreation use is estimated to be 1,800 visitor days per year.

Local Personal Income

Livestock use at the current level of 4,561 AUMs and recreation use totaling 1,800 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $54,732 for livestock grazing and $21,600 related to recreation use of the WSA, for an overall total of $76,332. The Statewide EIS volume discussed the term local personal income and how income figures have been derived.

4. Environmental Consequences

Introduction

This section discusses the environmental consequences of implementing each of the alternatives. Resources and activities not significantly affected by any of the alternatives are not discussed. The Statewide volume discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness: 55,880 acres
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

All of the WSA would be designated wilderness, and wilderness values within the entire 55,880 acres would be protected by legislative mandate. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. Special features, including scenic values associated with the Donner und Blitzen River Canyon and Fish Creek Canyon, the raptor nesting, a sage grouse strutting ground, redband trout habitat and the crucial deer winter range would be protected.

Naturalness

The naturalness of the area's steep, rugged river and creek canyons, the adjacent ridgelines covered with juniper, and sagebrush which is intermixed with dark outcroppings of darkly-colored basalt would be slightly enhanced by the closure of 48 miles of ways. This closure would allow the ways to naturally revegetate and return to an unbroken sagebrush and grass landscape.

Construction of 1.9 miles of riparian fence would directly disturb 2 acres and visually influence an additional 190 acres.

The 52 existing reservoirs, one spring development and the 2-mile irrigation ditch would require heavy equipment approximately once every 10 years for each development. This infrequent amount of use would not prevent the ways from revegetating.

Solitude

Opportunities for solitude provided by the topography of the WSA, the steep and rugged river and creek canyons, and the aspen groves and meadows on the east side would improve slightly with the closure of 48 miles of ways and the reduced vehicle use in the WSA.

Maintenance of the existing 52 reservoirs, one spring development and the 2-mile irrigation ditch would require the use of heavy equipment approximately once every 10 years for each facility. This maintenance activity would cause minor local impairment of solitude.

Primitive and Unconfined Recreation

Closure of the 48 miles of existing ways to motorized vehicle use would provide a larger core area and would increase opportunities for participating in primitive and unconfined recreation activities such as hiking, sightseeing, hunting, fishing, photography, wildlife viewing, backpacking, camping and horseback riding. The quality of these activities would improve with the elimination of vehicles on, and the rehabilitation of, ways. A more natural, primitive and wild setting would be provided. Fencing 1.4 miles of riparian area along upper Fish Creek Canyon, excluding livestock, and allowing vegetation to recover would enhance wildlife viewing, photography, hunting and fishing opportunities in the upper Fish Creek Canyon. Some species populations would increase within the exclosure, providing improved primitive recreation opportunities.

Special Features

Reducing motorized vehicle use within the WSA, involving 48 miles of existing ways, would reduce their influence on the area's special features. These influences include impairment of scenic vistas and minor seasonal disturbance to wildlife that inhabit the study area. The ways traverse areas with populations of sage grouse, antelope and deer, causing minor disturbance to these animals. The ways also occur in areas of scenic quality, resulting in a visual contrast not in harmony with the natural setting.

Conclusion: Wilderness designation of the entire 55,880 acres within the Blitzen River WSA would result in the protection of the existing wilderness values and probable enhancement of those values.

Impacts on Energy and Mineral Development

Wilderness designation would close 48,850 acres within the WSA to mineral entry. In this alternative, approximately 4,960 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships. The 680 acres of private land and 2,070 acres of mineral estate of split-estate lands would be open to mineral exploration and development.

Energy Development

Energy exploration and development would be precluded on 48,850 acres within the WSA. The entire WSA has a low potential for the occurrence of energy resources; therefore, no energy development is anticipated.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for copper, molybdenum, gold and silver would be precluded on 48,850 acres. Exploration could occur on 2,750 acres of split-estate land and private land; however, no exploration is postulated on these lands. Casual exploration, without development, is projected due to the lack of sufficient geological evidence to justify an extensive exploration and development program.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Wilderness designation would not introduce any significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the Vegetation section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid-seral stage overall.

The 48 miles of existing ways, once closed to vehicle use, would naturally revegetate with annual forbs and grasses within approximately two growing seasons. Sagebrush would reestablish on these ways within five years.

The riparian fencing project along 1.4 miles of upper Fish Creek would substantially improve the riparian community by eliminating livestock use. Riparian species of chokecherry, willow and golden currant, as well as forbs and grasses, would be reestablished within the exclosure.

Conclusion: The 48 miles of ways, totaling 48 acres, would revegetate. Riparian vegetation would substantially improve along 1.4 miles of stream. Overall vegetation would remain unchanged in the remainder of the area.

Impacts on Wildlife

Wildlife habitat for a summer population of 750 deer, 15 elk and 100 antelope, and a winter population of 1,500 deer, 10 elk, 25 antelope and sage grouse would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives.

Maintenance of the Blitzen River riparian fence would be on foot or by vehicle via open roads. The upper part of Fish Creek would be excluded from livestock grazing to improve riparian habitat. The riparian habitat is currently in the mid-seral stage, but would improve within five years to the late seral stage with the protection of the riparian exclosure. Fish habitat would improve from the current fair condition to good condition within 10 years due to improved riparian habitat and reduced sedimentation. This riparian exclosure would require construction of 1.9 miles of fence which would create an exclosure containing 1.4 miles of Fish Creek and an estimated 200 acres. This project would likely be allowed in wilderness because it would correct the adverse effects of human influences (from livestock use of riparian areas).

Closure of the 48 miles of ways would reduce vehicle disturbance of antelope, deer and other wildlife during the hunting season. Disturbance to wildlife during the rest of the year would be minimal.

Fishery studies, which currently utilize helicopters with some vehicle use for access into the river corridors, would be precluded resulting in increased time, inconvenience and cost to accumulate data for fishery management.

The reconstruction of the Kundert Reservoir has been proposed to create a warm water fisheries habitat, but would not be allowed under this alternative due to future maintenance requiring the use of vehicles. This project is not necessary for the continued existence of wildlife in the WSA. Associated increases of additional warm water fish populations would be foregone.

Conclusion: Wildlife habitat and populations would be maintained on 55,880 acres and enhanced in the 1.4-mile riparian area on Fish Creek. Fishery studies and construction of a warm-water fishery project would be foregone.

Impacts on Watershed

The proposed fencing project along 1.4 miles of upper Fish Creek would exclude livestock from the streambank, which would promote stabilization of the gullies and improve water quality in the riparian area. Overall water quality would improve due to decreased water temperatures and sediment load reduction. There would be little change in the watershed over the rest of the area.

Conclusion: Active gullies would begin to stabilize and water quality would improve within the 1.4-mile riparian exclosure. There would be little change in the watershed over the rest of the area.

Impacts on Livestock Grazing

Livestock grazing would remain at the current estimated level of approximately 4,561 AUMs within the portions of the three grazing allotments located within the WSA. The seasons of use and distribution of AUMs for all three allotments would remain as shown in Table 4.

Vehicle use for livestock management and facility inspection and maintenance on 48 miles of ways would be precluded. Annual inspection and maintenance of 33 miles of fences, not accessible to open roads, would be done on foot or by the use of riding and pack animals. This would result in some inconvenience and a slight additional expense to the grazing operators. Maintenance of the 52 existing reservoirs, one spring development and the 2-mile irrigation ditch would require the use of heavy equipment approximately once every 10 years for each facility.

Conclusion: Livestock use would remain at 4,561 AUMs. Vehicle use on 48 miles of ways would be precluded, with some inconvenience and slight additional expense to livestock operators.

Impacts on Recreation Use

Except for the specific areas served by the 15 miles of dead-end roads that would remain open under this alternative, the entire 55,880 acres of the WSA would be closed to vehicle-oriented recreation, involving 48 miles of existing ways. This closure would eliminate vehicle-oriented recreation on the 48 miles of ways, but would still allow access to specific areas throughout the WSA, because the dead-end roads would remain open.

Primitive recreation would be expected to increase slightly due to the closure of 58 miles of ways. Some vehicle-oriented recreation is expected to be displaced into other areas, but would continue on the 15 miles of dead-end roads. Primitive recreation activities would be affected adjacent to these roads because of continued vehicle use. Projected use patterns indicate that the current level of 1,800 visitor days per year would decrease over time, to 1,200 visitor days per year.

Conclusion: Recreation use would decrease from the current level of 1,800 visitor days per year to approximately 1,200 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 4,561 AUMs. Overall recreation use would decrease by 600 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $7,200 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $7,000.

Enhanced Wilderness

Recommended suitable for wilderness: 59,240 acres (assuming acquisition of 1,110 acres of private land and incorporation of 2,250 acres of adjacent public lands)

Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

The enhanced wilderness alternative would add 59,240 acres to the NWPS, with acquisition of the 1,110 acres of private land, the mineral estate of 2,070 acres of split-estate lands, and the inclusion of 2,250 acres of public land outside the WSA boundary. The effects of this alternative would be nearly the same as the all wilderness alternative; however, acquisition of the private land and mineral estate would prevent disturbance from projected mineral exploration on these parcels. This would ensure preservation of the wilderness qualities of the entire area. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. Special features, including scenic values associated with the Donner und Blitzen River Canyon and Fish Creek Canyon, a sage grouse strutting ground, redband trout habitat and the crucial deer winter range would be protected.

Naturalness

This alternative would preserve the overall naturalness of the entire WSA because of the acquisition of the 2,070 acres of mineral estate of split-estate lands and 1,110 acres of private land within the WSA. This action would eliminate any possible development of, and the need for access to, these scattered parcels.

Fifty-one miles of ways and 17 miles of dead-end roads would be closed. The closure of ways and roads would improve the overall naturalness of the

WSA by allowing the ways and roads to revegetate to an eventual unbroken sagebrush, grass and juniper landscape. This would eliminate the unnatural influence of the roads and ways on approximately 11,136 acres.

Some of the ways would continue to receive use approximately once every 10 years for the purpose of maintenance of each of the existing range developments (59 reservoirs, one spring development and the 2-mile irrigation ditch). This infrequent use would not prevent these vehicle routes from revegetating.

Solitude

Opportunities for solitude would increase slightly with the elimination of motorized vehicle use on the 51 miles of ways and 17 miles of dead-end roads. The continued use of some of these ways for access to, and maintenance of, existing range improvements (59 reservoirs, one spring development and the 2-mile irrigation ditch) approximately once every 10 years for each facility means that vehicle intrusions would not be eliminated completely from the study area. This periodic maintenance of the existing range developments, which requires the use of heavy equipment, would cause a short-term localized disturbance due to mechanical intrusions and associated human activity.

Acquisition of the mineral estate and private land within the WSA would eliminate the projected exploration and the need for access to these parcels. The unbroken landownership pattern resulting from these land acquisitions would further enhance solitude by allowing visitors to utilize a larger block of land.

Primitive and Unconfined Recreation

Under the enhanced wilderness alternative, opportunities for primitive recreation activities (day hiking, backpacking, horseback riding, fishing, hunting, photography and sightseeing), would be maintained or improved. The elimination of motorized vehicle use on 51 miles of ways and 17 miles of dead-end roads and the acquisition of mineral estate and private land, further enhance the qualities of primitive recreation activities. However, continued access for maintenance of the existing range developments approximately once every 10 years would cause a short-term localized disturbance to those persons participating in primitive recreation activities.

Shifts in the type of hunters utilizing the WSA, from vehicle-oriented to foot or horseback, would occur. Fishing in the area would remain at the current use levels because the majority of anglers must walk to their destination.

Special Features

The current vehicular influence on animal communities of special interest would be reduced by the elimination of the majority of vehicle use within the WSA. No other projected actions or developments are expected to occur in the immediate vicinity of these species' habitats.

All of the special features of the WSA, including a known sage grouse strutting ground with accompanying nesting habitat, redband trout habitat, crucial deer winter range and raptor nesting areas, would be protected from projected mineral exploration through acquisition and withdrawal of land from mineral entry.

Conclusion: Wilderness designation of the 59,240 acres (assuming acquisition of 1,110 acres of private land in the WSA and the inclusion of 2,250 acres of public land outside the WSA) would result in the protection of existing wilderness values and enhancement of those values.

Impacts on Energy and Mineral Development

Under the enhanced wilderness alternative, 47,410 acres, plus an additional 1,110 acres of private land and the mineral estate of 2,070 acres of split-estate land proposed for acquisition, and the addition of 2,250 acres of public land outside the WSA would be withdrawn from mineral entry. In this alternative, approximately 6,400 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships.

Energy Development

Energy exploration and development would be precluded on 52,840 acres, assuming acquisition of the private lands and split-estate lands and the inclusion of 2,250 acres of public land outside the WSA. No energy exploration or development is projected in the WSA due to the low potential for occurrence of these resources in the area.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for copper, molybdenum, gold and silver would be precluded on 52,840 acres. Only casual exploration, with no development, is projected due to the lack of sufficient geological evidence to justify an extensive exploration/development program.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Wilderness designation would not introduce significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the Vegetation section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid-seral stage overall.

The 51 miles of ways and 17 miles of dead-end roads would naturally revegetate with annual forbs and grasses within two growing seasons. Sagebrush would become reestablished on these vehicle routes within five years.

The riparian fencing project proposed for upper Fish Creek would not be constructed under this alternative and the riparian area would continue to be heavily grazed. The riparian area's ecological status would continue to decline.

Conclusion: The 51 miles of ways and 17 miles of dead-end roads (totaling approximately 90 acres) would revegetate. Riparian areas along upper Fish Creek would not recover. Overall vegetation would remain basically the same over the rest of the WSA.

Impacts on Wildlife

Wildlife habitat for a summer population of 750 deer, 25 elk and 100 antelope and a winter population of 1,500 deer, 15 elk and 25 antelope would be maintained under wilderness designation. Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives. Sage grouse habitat would also be maintained.

Maintenance of the Blitzen River riparian fence would be on foot or horseback. A proposed riparian fence to exclude livestock from 1.4 miles of upper Fish Creek would not be constructed under this alternative because the preclusion of vehicles would make maintenance difficult. The objective of this proposed fence is to improve riparian and trout habitat and those benefits would be foregone under this alternative.

The rehabilitation of Kundert Reservoir has been proposed to create a warm water fisheries habitat. This project would not be constructed under this alternative, and those benefits would be foregone. Fishery studies, which currently utilize helicopters for access into the river corridor, would be precluded resulting in increased time, inconvenience and cost to accumulate the data for fishery management.

The closure of 17 miles of dead-end roads and 51 miles of ways would result in elimination of vehicle disturbance to antelope, deer and other wildlife species, primarily during the hunting season. Precluding access to the Blitzen River on the Burnt Car Road, Tombstone Road and the road above lower Blitzen River Canyon would have little impact on trout populations due to the light angling pressure that occurs with present vehicle access to these areas.

Acquisition of 100 acres of private land would add wilderness protection to 0.5 miles of riparian habitat along Fish Creek. This area is also deer summer range plus redband trout habitat. The trout habitat along 0.35 mile is in good condition (riparian habitat is late seral) and the remaining 0.15 mile is in fair condition (riparian habitat is mid-seral).

Three miles of the Blitzen River would be added to the wilderness area under this alternative, and contains redband trout habitat which is in good condition.

Conclusion: Wildlife habitat and populations would be maintained on 59,240 acres. Fishery studies and construction of a warm-water fishery project would be foregone.

Impacts on Watershed

Under this alternative, inclusion of approximately 300 acres of public land on the southern end of the WSA would add 3 miles of Blitzen River to the area designated as wilderness. The proposed riparian fencing project on upper Fish Creek would not be constructed under this alternative. Livestock pressure would continue to occur in these riparian areas and would maintain the impacts of erosion and turbidity problems on upper Fish Creek. There would be little change in the watershed over the rest of the WSA.

Conclusion: Soil erosion, turbidity and declining water quality would continue on upper Fish Creek. Overall water quality in the WSA would remain unchanged.

Impacts on Livestock Grazing

Livestock grazing use would remain at the current use level of approximately 4,561 AUMs within the portions of the three allotments located within the entire WSA.

The seasons of use and distribution of AUMs for all three allotments would remain as shown in Table 4.

Vehicle use for livestock management and facility inspection and maintenance on the existing 51 miles of ways and 17 miles of dead-end roads would be precluded. This would result in some inconvenience and a slight additional expense to livestock grazing operators. Annual inspection and maintenance of fences not accessible by open roads would be done on foot or by the use of riding and pack animals. Heavy equipment would be used on the average of once every 10 years to maintain the 59 reservoirs, one spring and 2 miles of irrigation ditch.

Conclusion: Livestock use would remain at the current level of 4,561 AUMs. Vehicle use on 51 miles of ways and 17 miles of dead-end roads would be precluded, causing some inconvenience and slight increased expense to operators.

Impacts on Recreation Use

Motorized vehicle use would be precluded on 59,240 acres, including 17 miles of dead-end roads and 51 miles of ways. This closure would eliminate all motorized vehicle use in the area, mainly affecting big game hunting.

Some of the reduction in visitor days from vehicle-oriented hunting could be offset by increased use from hunters who do not rely on vehicles for transportation within their hunting areas. Fishing use within the WSA would remain the same since most anglers must walk to their destination.

The quality of primitive recreation activities is expected to improve with the elimination of motorized vehicles within the WSA. The expected increase in primitive recreation use would not be sufficient to offset the reduction in vehicle-oriented recreation. Projected use patterns indicate that the current level of 1,800 visitor days per year would decrease over time, to 900 visitor days per year.

Conclusion: Recreation use would decrease from the current level of 1,800 visitor days per year to approximately 900 visitor days per year.

Impacts on Local Income

Livestock grazing would remain at 4,561 AUMs. Overall recreation use would decrease by 900 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $10,800 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $11,000.

Proposed Action

Recommended suitable for wilderness: 22,070 acres (assuming acquisition of 100+acres of private land and the addition of 300 acres of adjacent public land)

Recommended nonsuitable for wilderness: 34,210 acres

Impacts on Wilderness Values

The proposed action would add 22,070 acres to the NWPS, with the acquisition of 100 acres of private land and the mineral estate of 1,115 acres of split-estate lands and the addition of 300 acres of adjacent public land. The area that is recommended suitable as wilderness includes the Blitzen River Canyon and Fish Creek Canyon and the northeastern portion of the WSA. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved in this area. Special features, including scenic values associated with Blitzen River Canyon and Fish Creek Canyon, raptor habitat, a sage grouse strutting ground and crucial deer winter range would be protected.

The 34,210 acres recommended nonsuitable would not be designated wilderness, and the wilderness values associated with this area would not receive special legislative protection. The wilderness values and special features of this acreage would be subject to impacts from projected management actions, including range improvements and continued use of the area by vehicles.

Under this alternative, 8 miles of dead-end roads and 8 miles of ways would be closed to motorized vehicle use.

Naturalness

The naturalness of the area's deeply-cut Blitzen River Canyon and Fish Creek Canyon and their associated scenic values, as well as the rolling plateau and aspen groves and meadows in the eastern portions of the WSA would be slightly enhanced by the closure of 8 miles of ways and 8 miles of dead-end roads. This closure would allow the roads and ways to naturally revegetate and return to a sagebrush and grass landscape.

Reservoir maintenance would require heavy equipment access on the 8 miles of ways and 8 miles of roads approximately once every 10 years for each of the 19 existing reservoirs and one spring located within the portion of the WSA recommended suitable for wilderness designation. This amount of use would not prevent the ways from revegetating.

In the portion of the WSA recommended as nonsuitable, continued vehicle use on the 7 miles of dead-end roads and 40 miles of ways would maintain the impact of vehicle tracks upon naturalness on approximately 8,700 acres of the WSA.

The rehabilitation of Kundert Reservoir would directly disturb 10 acres and visually influence an additional 100 acres.

Construction of the projected livestock developments, including one spring development, one waterhole, 2 miles of fence and the accompanying changes in livestock grazing patterns would directly disturb five acres, and visually influence naturalness on approximately 300 acres in the western portion of the WSA recommended nonsuitable.

Solitude

Opportunities for solitude provided by the area's deeply-cut and winding Blitzen River Canyon, Fish Creek Canyon and the topography of the remainder of the WSA would slightly improve with the closure of 8 miles of existing ways and 8 miles of dead-end roads and a reduction in vehicle-oriented use. A core area would be provided for people to hike into and experience solitude with no disturbance from vehicles.

Maintenance of the 19 existing reservoirs and one spring would require the use of heavy equipment approximately once every 10 years for each facility. This maintenance activity would cause minor local impairment of solitude.

In the area recommended nonsuitable, continued vehicle use limited to 7 miles of dead-end roads and 40 miles of ways and human activity associated with vehicle use and projected range improvements would cause repeated, but short-term impairment of solitude opportunities adjacent to these activities. Projected range developments for this area include one spring development, one waterhole and 2 miles of fence. Solitude opportunities in the rest of the area would remain unchanged.

Primitive and Unconfined Recreation

Closure of 8 miles of existing ways and 8 miles of dead-end roads to motorized vehicle use would expand the core area available for participating in primitive and unconfined recreation activities such as hiking, sightseeing, hunting, photography, wildlife viewing, camping, backpacking, horseback riding and fishing. The quality of these activities would improve with the elimination of motor vehicles and the revegetation of roads and ways. A more natural, primitive and wild setting would be provided in the area recommended suitable.

In the area recommended nonsuitable, the area available to participate in primitive and unconfined recreation would be reduced by the development of range improvement projects (one spring development, one waterhole and 2 miles of fence) and continued vehicle use. Vehicle use would continue on the existing 7 miles of dead-end roads and 40 miles of ways. Such use would continue to intrude upon primitive, nonmotorized recreation activities in the vicinity of these roads and ways.

Special Features

Eliminating motorized vehicle use on the 8 miles of existing ways and 8 miles of dead-end roads would reduce vehicle influences to the area's special features. These influences include vehicle use impairing scenic vistas and causing minor seasonal disturbance to wildlife that inhabit the study area because the ways and roads traverse areas with populations of wildlife. The ways also cross areas of scenic quality, resulting in visual contrasts not in harmony with the natural setting.

Special features associated with the area recommended nonsuitable would be subject to disturbance and impacts from projected development of range improvements and projected mineral exploration. Monitoring and mitigation measures would reduce or eliminate possible impacts. Continued vehicle use on 40 miles of ways and 7 miles of dead-end roads that would remain open would maintain the impacts on scenic vistas and minor seasonal disturbance to wildlife that inhabit this area.

Conclusion: Wilderness designation of 22,070 acres would result in protection and enhancement of the existing wilderness values in the area. The 34,210 acres recommended nonsuitable would be subject to projected resource activities that would both directly and indirectly impair wilderness values over approximately 400 acres, with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

Under the proposed action, wilderness designation of 15,895 acres of public land and an additional 1,215 acres of mineral estate of split-estate land and private land proposed for acquisition, would be closed to mineral entry. The 34,210 acres of public land recommended nonsuitable would remain open to energy and mineral exploration and development. In this alternative, approximately 4,960 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships.

Energy Development

Energy exploration and development would be precluded on 17,110 acres (including acquired lands) within the WSA. The WSA has a low potential for the occurrence of energy resources; therefore, no energy development is projected.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for copper, molybdenum, gold and silver would be precluded on 17,110 acres designated wilderness. Due to the lack of sufficient geological evidence to justify an extensive exploration/development program, it is projected that only casual mineral exploration, without development, would occur on the 34,210 acres recommended nonsuitable.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Wilderness designation would not introduce significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the Vegetation section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid-seral stage overall.

The 8 miles of ways and 8 miles of dead-end roads, once closed to vehicle use, would naturally revegetate within approximately two growing seasons with annual forbs and grasses. Sagebrush would become reestablished on these ways within five years.

The riparian fencing project proposed for upper Fish Creek would not be constructed under this alternative and the riparian area would continue to be heavily grazed by livestock. The riparian area's ecological status would continue to slowly decline.

In the area recommended nonsuitable, the 40 miles of ways and 7 miles of dead-end roads would not revegetate due to continued use by vehicles. One spring development, one waterhole and 2 miles of fence would also be constructed in this area, directly disturbing 5 acres and corresponding vegetative cover. The rehabilitation of Kundert Reservoir would inundate 10 acres of native vegetation.

Conclusion: Eight miles of ways and 8 miles of dead-end roads would revegetate. Riparian areas along 1.4 miles of upper Fish Creek would continue to slowly decline. Overall vegetation would remain the same in the rest of the area. Approximately 15 acres would be disturbed due to range and wildlife projects.

Impacts on Wildlife

Adequate habitat and forage for game (including deer, elk, antelope, sage grouse and redband trout) and nongame species would be ensured in livestock allotment management plans in order to meet ODFW goals. Maintenance of the Blitzen River riparian fence would continue to be on foot or by vehicle. A proposed fence to exclude livestock from 1.4 miles of upper Fish Creek would not be constructed because road closures precluding vehicle use would make maintenance difficult. The objective of this proposed fence is to improve riparian and trout habitat and those benefits would be foregone. Fishery studies, which currently utilize helicopters for access into the river corridor, would be precluded, causing an increase in time, inconvenience and cost to gather data for fishery management. Acquisition of 100 acres of private land would add wilderness protection to 0.5 miles of riparian habitat along Fish Creek. This area is also deer summer range and provides habitat for those species using steep, rocky slopes, plus redband trout habitat in 0.5 mile of Fish Creek. The trout habitat along 0.35 mile is in good condition (riparian habitat is late seral) and the remaining 0.15 mile is in fair condition (riparian habitat is mid-seral).

Three miles of the Blitzen River which contains redband trout habitat in good condition would be added to the wilderness area under this alternative.

Closure of 8 miles of dead-end roads and 8 miles of ways would slightly reduce disturbance to antelope, deer and other wildlife during hunting season. Precluding access to the Blitzen River on the Burnt Car

Road would have little effect on trout populations due to the relatively light angling use that occurs with present vehicle access.

The area recommended nonsuitable would contain approximately 80 percent of the deer winter range, 95 percent of the antelope range and 98 percent of the deer summer range. The seven water developments projected to improve range management and livestock disturbance would improve habitat for summering antelope and nongame species.

Kundert Reservoir would be rehabilitated, creating a 30-surface acre warm water fishery in the area recommended nonsuitable for wilderness. As a result populations of warm water fish would be established.

Vehicle use on 40 miles of ways and 7 miles of roads would continue to disturb antelope, deer and other wildlife during hunting season. Disturbance to wildlife during the rest of the year would be minimal.

Conclusion: Wildlife habitat and populations would be maintained on 22,070 acres designated wilderness. In the area recommended as nonsuitable, the rehabilitation of Kundert Reservoir for a warm-water fishery would be completed.

Impacts on Watershed

Under this alternative, inclusion of 300 acres of public lands outside the WSA boundary would add 3 miles of Blitzen River to the wilderness area. The proposed riparian fencing project along upper Fish Creek would not be constructed under this alternative and livestock pressure would continue to occur in these riparian areas and would maintain the impacts of erosion and turbidity problems on upper Fish Creek. There would be little change in the watershed over the rest of the WSA.

Conclusion: Soil erosion, turbidity and overall water quality would continue to slowly decline on upper Fish Creek. Overall water quality within the WSA would remain unchanged.

Impacts on Livestock Grazing

Livestock grazing would remain at the current estimated use level of approximately 4,561 AUMs within the portions of the three grazing allotments located within the entire WSA. The seasons of use and distribution of AUMs for all three allotments would remain as shown in Table 4.

Vehicle use for livestock management and facility inspection and maintenance on 8 miles of ways and 8 miles of dead-end roads would be precluded. This would result in some inconvenience and a slight additional expense to the livestock operators. Annual inspection and maintenance of 14 miles of existing fence would be done on foot or by use of riding and pack animals. Heavy equipment would be used approximately once every 10 years to maintain the 19 existing reservoirs and one spring in the area recommended suitable for wilderness.

In the area recommended nonsuitable, one spring development, one waterhole and 2 miles of fence would be constructed, resulting in improved livestock distribution within the entire WSA. Vehicle use for livestock management, facility inspection and maintenance would continue on 40 miles of ways and 7 miles of dead-end roads.

Conclusion: Livestock use would remain at 4,561 AUMs. Livestock distribution would improve over the entire WSA due to projected range developments. Vehicle use on 8 miles of ways and 8 miles of dead-end roads would be precluded causing a slight inconvenience and some additional expense to livestock operators.

Impacts on Recreation Use

Motorized vehicle use would be precluded on 22,070 acres, including 8 miles of dead-end roads and 8 miles of ways.

Vehicle-oriented recreation would be eliminated within the area recommended suitable and would be displaced into other areas. This would improve the quality of primitive recreation, which would increase slightly. Some of the vehicle-oriented users would continue to use the area, traveling by foot or horseback.

Primitive recreation would increase within the suitable area, but would not be sufficient to offset the reduction in vehicle-oriented recreation. Current recreational use is estimated to be 1,800 visitor days per year for the entire WSA. A majority of the primitive recreation use occurs in the Fish Creek Canyon and Blitzen River Canyon. A 600 visitor day annual reduction will occur as a result of road and way closures under this alternative.

In the nonsuitable area, vehicle use of 34,210 acres would continue to be limited to existing roads and ways and 10 miles of ways would remain closed under the off-highway vehicle designation associated with the Steens Mountain Recreation Lands.

Conclusion: A net reduction of the area's overall recreation use level, from 1,800 visitor days per year to 1,200 visitor days per year, would occur.

Impacts on Local Personal Income

Livestock grazing would remain at 4,561 AUMs. Overall recreation use would decrease by 600 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $7,200 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $7,000.

Partial Wilderness

Recommended suitable for wilderness: 8,835 acres (assuming acquisition of 100 acres of private land)
Recommended nonsuitable for wilderness: 47,145 acres

Impacts on Wilderness Values

The partial alternative would add 8,835 acres to the NWPS, with the acquisition of 100 acres of private land and the mineral estate of 620 acres of split-estate lands. The area that is recommended suitable as wilderness includes the Blitzen River Canyon and Fish Creek Canyon. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved in this area. Special features, including scenic values associated with the Blitzen River Canyon and Fish Creek Canyon, raptor habitat, and redband trout habitat would be protected.

Under this alternative, 1 mile of dead-end road and 1 mile of way would be closed to motorized vehicle use.

The 47,145 acres recommended nonsuitable would not be designated wilderness and the wilderness values associated with this area would not receive special legislative protection. The wilderness values and special features of this acreage would be subject to impacts from projected management actions, including range improvements and continued use of the area by vehicles.

Naturalness

The naturalness of the area's deeply-cut Blitzen River Canyon and Fish Creek Canyon and the associated scenic values would be slightly enhanced by the closure of 1 mile of way and 1 mile of dead-end road. This closure would allow the roads and ways to naturally revegetate and return to a sagebrush and grass landscape.

Construction of 1.9 miles of riparian fence would directly disturb 2 acres and visually influence an additional approximately 190 acres.

Reservoir maintenance would require heavy equipment access on the 1 mile of way and 1 mile of road approximately once every 10 years for each of the four existing reservoirs located within the portion of the WSA recommended suitable for wilderness designation. This amount of use would not prevent the road and way from revegetating.

In the portion of the WSA recommended as nonsuitable, continued vehicle use on the 14 miles of dead-end roads and 47 miles of ways would maintain the impact of vehicle tracks upon naturalness on approximately 11,000 acres of the WSA.

The rehabilitation of the Kundert Reservoir would directly disturb 10 acres and visually influence naturalness on an additional 100 acres.

Construction of the projected livestock developments, including three spring developments, three reservoirs, one waterhole, 2 miles of fence and the accompanying changes in livestock grazing patterns would directly disturb 18 acres and visually influence approximately 600 acres in the portions of the WSA recommended nonsuitable.

Solitude

Opportunities for solitude provided by the area's deeply-cut and winding Blitzen River Canyon and the Fish Creek Canyon would slightly improve with the closure of 1 mile of existing way and 1 mile of dead-end road and a reduction in vehicle-oriented use. Vehicles would be limited to roads and ways in the portion of the WSA recommended nonsuitable, thus providing a core area for people to hike into and experience solitude with no disturbance from vehicles.

Maintenance of the four existing reservoirs would require the use of heavy equipment approximately once every 10 years for each facility. This maintenance activity would cause minor local impairment of solitude.

In the area recommended nonsuitable, continued vehicle use on 14 miles of dead-end roads and 47 miles of ways and human activity associated with vehicle use and projected range improvements would cause repeated, but short-term impairment of solitude opportunities adjacent to these activities. Projected range developments for this area include three spring developments, three reservoirs, one waterhole and 2 miles of fence. Solitude opportunities in the rest of the area would remain unchanged.

Primitive and Unconfined Recreation

Closure of 1 mile of existing way and 1 mile of dead-end road to motorized vehicle use would increase opportunities for participating in primitive and unconfined recreation activities such as hiking, sightseeing, hunting, photography, wildlife viewing, camping, backpacking, horseback riding and fishing. The quality of these activities would improve with the elimination of motor vehicles and the revegetation of roads and ways. A more natural, primitive and wild setting would be provided in the area recommended suitable.

In the area recommended nonsuitable, the opportunities to participate in primitive and unconfined recreation would be reduced by the development of range improvement projects (three spring developments, three reservoirs, one waterhole and 2 miles of fence) and continued vehicle use. Vehicle use would continue on the existing 14 miles of dead-end roads and 47 miles of ways. Such use would continue to intrude upon primitive, nonmotorized recreation opportunities in the vicinity of these roads and ways.

Special Features

Eliminating motorized vehicle use on the 1 mile of existing way and 1 mile of dead-end road would reduce influences on the area's special features. The influences include vehicle use impairing scenic vistas and causing minor seasonal disturbance to wildlife that inhabit the study area. The way and road traverse areas with wildlife populations. The routes also cross areas of scenic quality, resulting in visual contrasts not in harmony with the natural setting.

Special features associated with the area recommended nonsuitable would be open to disturbance and impacts from projected development of range improvements and projected mineral exploration. Monitoring and mitigation measures would reduce or eliminate possible impacts. Continued vehicle use on 47 miles of ways and 14 miles of dead-end roads would maintain the impacts on scenic vistas and minor seasonal disturbance to wildlife that inhabit this area.

Conclusion: Wilderness designation of 8,835 acres of the Blitzen River WSA would result in protection and enhancement of the existing wilderness values in the area. The 47,145 acres recommended nonsuitable would be subject to projected resource activities that would both directly and indirectly impair wilderness values over approximately 900 acres, with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

Under the partial alternative, 2,355 acres plus an additional 620 acres of mineral estate and 100 acres of private lands proposed for acquisition would be closed to mineral entry. The remaining 47,145 acres recommended nonsuitable would be open to mineral exploration and development. In this alternative, approximately 5,760 acres are already withdrawn from mineral location and leasing due to the Wild and Scenic River designation described in Section 1 under Interrelationships.

Energy Development

Energy exploration and development would be precluded on 3,075 acres within the WSA. The entire WSA has a low potential for the occurrence of energy resources; therefore, no energy development is projected.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for copper, molybdenum, gold and silver would be precluded on 3,075 acres designated wilderness. Due to the lack of sufficient geological information, only casual exploration, without development, is projected for the remaining 47,145 acres open to mineral entry.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Wilderness designation would not introduce any significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the Vegetation section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid-seral stage overall.

In the area recommended suitable for wilderness, 1 mile of way and 1 mile of dead-end road (totaling approximately 3 acres) would naturally revegetate with annual forbs and grasses within two growing seasons. Sagebrush would reestablish on the road and way within five years.

The riparian fencing project along 1.4 miles of upper Fish Creek would substantially improve the riparian plant community within this exclosure by eliminating livestock use. Riparian species of chokecherry, willow and golden currant would become reestablished within the exclosure.

Within the area recommended as nonsuitable for wilderness, the 47 miles of existing ways and 14 miles of dead-end roads would not revegetate due to continued use by vehicles. The rehabilitation of Kundert Reservoir would involve inundation of 10 acres of native vegetation.

Conclusion: The 1 mile of dead-end road and 1 mile of way (totaling 3 acres) would revegetate. Riparian vegetation along 1.4 miles of stream would substantially improve. Vegetation would be removed on 25 acres from range and wildlife projects.

Impacts on Wildlife Habitat

Adequate forage for game (including deer, elk, antelope and redband trout) and nongame species would be ensured in livestock allotment management plans in order to meet ODFW goals. One fencing project proposed to improve riparian fish habitat in the upper part of Fish Creek would be constructed. The project would be appropriate in the area recommended suitable because it would correct the adverse affects of human influences (livestock use pressure). The density and vigor of riparian vegetation along Fish Creek would increase and bank erosion would be reduced. Increased shrub cover would increase thermal and nesting cover and allow for reduced water temperatures during the summer months. Resulting water quality improvement would enhance redband trout habitat and populations.

The Blitzen River riparian fence maintenance would continue to be on foot or by vehicle via open roads. Fishery studies, which currently utilize helicopters for access into the river corridor, would be precluded, causing an increase in time, inconvenience and cost to gather data for fishery management.

Acquisition of 100 acres of land would add wilderness protection to 0.5 mile of trout and riparian habitat along Fish Creek. This area is also deer summer range and provides habitat for those species using steep, rocky slopes. Of the 0.5 miles of Fish Creek, 0.35 mile is in good condition for trout (riparian habitat is late seral) and 0.15 mile is in fair condition for trout (riparian habitat is mid-seral).

Closure of 1 mile of road and 1 mile of way would have almost no effect on wildlife. Precluding access to the Blitzen River on the Burnt Car Road would have little effect on trout populations due to the relatively light angling use that occurs with present vehicle access.

The area recommended nonsuitable would contain approximately 80 percent of the deer winter range, 95 percent of the antelope range and 98 percent of the deer summer range. The seven water developments projected to improve range management and livestock distribution would improve habitat for summering antelope and nongame species. Kundert Reservoir would be rehabilitated, creating a 30 surface-acre warm water fishery in the area recommended nonsuitable for wilderness. As a result, populations of warm water fish would be established in the area.

Vehicle use on the 47 miles of ways and 14 miles of roads would continue to disturb antelope, deer and other wildlife during hunting season. Disturbance to wildlife during the rest of the year would be minimal.

Conclusion: Wildlife habitat and populations would be maintained on 8,835 acres designated wilderness. In the area recommended nonsuitable, the rehabilitation of Kundert Reservoir for a warm-water fishery would be completed.

Impacts on Watershed

The proposed fencing project along 1.4 miles of upper Fish Creek would exclude livestock from the streambank, which would promote stabilization of the gullies and improve water quality in the riparian area. There would be little change in the watershed over the rest of the area.

Conclusion: Active gullies would begin to stabilize and water quality would improve by excluding livestock pressure within the 1.4-mile riparian exclosure. There would be little change in the watershed over the rest of the area.

Impacts on Livestock Grazing

Livestock grazing would remain at the current estimated use level of approximately 4,561 AUMs within the portions of the three grazing allotments located within the entire WSA. The seasons of use and distribution of AUMs for all three allotments would remain as shown in Table 4.

Vehicle use for livestock management, facility inspection and maintenance on 1+mile of way and 1 mile of dead-end road would be precluded. This would result in some inconvenience and a slight additional expense to livestock operators. Annual inspection and maintenance of 9 miles of existing fence would be done on foot or by use of riding and pack animals. Heavy equipment would be used approximately once every 10 years to maintain the four existing reservoirs in the area recommended suitable for wilderness.

In the area recommended nonsuitable for wilderness, three spring developments, three reservoirs, one waterhole and 2 miles of fence would be constructed, providing improved range management and livestock distribution throughout the entire WSA. Vehicle use for livestock management and facility inspection and maintenance would continue on the 47 miles of existing ways and 14 miles of dead-end roads.

Conclusion: Livestock use would remain at 4,561 AUMs. Vehicle use on 1 mile of way and 1 mile of dead-end road would be precluded with slight inconvenience and increased cost to livestock operators.

Impacts on Recreation Use

Motorized vehicle use would be precluded on 8,835 acres, involving 1 mile of way and 1 mile of dead-end road. This would eliminate vehicle-oriented recreation for this immediate area. There would be no great disbursement of vehicle-oriented use to other areas, because vehicle-oriented recreationists would have a large area adjacent to the suitable area to utilize existing roads and ways.

Primitive recreation is expected to increase slightly because of the easy hiking access from Page Springs Campground into the WSA core area. Current recreational use is estimated to be 1,800 visitor days per year for the entire WSA. A 300 visitor day annual reduction will occur as a result of road and way closures under this alternative.

In the nonsuitable area, vehicle use would be limited to existing roads and ways and 10 miles of ways would remain closed to vehicular traffic under the off-highway designation associated with the Steens Mountain Recreation Lands.

Conclusion: Wilderness designation under this alternative would result in a reduction of the overall recreation use level, from 1,800 visitor days per year to approximately 1,500 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 4,561 AUMs. Overall recreation use would decrease by 300 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $3,600 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $4,000.

No Wilderness/No Action

Recommended suitable for wilderness: 0 acres
Recommended nonsuitable for wilderness: 55,880 acres

Impacts on Wilderness Values

Under the no wilderness alternative, the entire 55,880 acres would not be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation and the area's special features, including scenic values associated with Blitzen River Canyon and Fish Creek Canyon, the raptor nesting areas, a sage grouse strutting ground, redband trout habitat and the crucial deer winter range, would be subject to the effects of projected management actions, including range improvements and increased vehicle use of the area.

Naturalness

Continued vehicle use of the 48 miles of existing ways and 15 miles of dead-end roads would maintain the impact of vehicle tracks and usage upon naturalness, affecting approximately 11,000 acres (approximately 20 percent of the WSA). Most of this influence on the area's naturalness occurs in the eastern and western portions of the WSA.

Construction of the 1.9 miles of riparian fence would exclude livestock and allow revegetation, improving the natural appearance of 1.4 miles of riparian area. The fence itself, as an unnatural feature, would influence approximately 190 acres within the immediate area of the project.

The rehabilitation of Kundert Reservoir would directly disturb 10 acres and would visually influence an additional 100 acres.

Construction of projected range developments, including three spring developments, five reservoirs, one watering hole, 2 miles of fence and the accompanying changes in livestock grazing patterns would directly and disturb 20 acres and visually influence approximately 800 acres within the WSA.

Solitude

Continued vehicle use of 48 miles of existing ways and 15 miles of dead-end roads, and human and mechanical activity associated with range improvement construction and maintenance, would cause repeated, but short-term, local impairment of solitude opportunities adjacent to these activities. The projected increasing use of vehicles for recreational pursuits would impair solitude opportunities in the vicinity of the roads and ways. Solitude opportunities in the river and creek canyons would remain unchanged.

Primitive and Unconfined Recreation

Under this alternative, opportunities for participating in primitive recreation activities would be reduced by development of range projects and the increasing use of vehicles for recreational pursuits.

The 48 miles of ways and 15 miles of dead-end roads would remain open, allowing for the continued and increasing use of these roads and ways by vehicles. This would limit and impair the opportunity to engage in primitive recreation activities. Livestock developments and vehicle use for grazing management, as well as continued vehicle-oriented hunting on the roads and ways, would reduce opportunities for primitive and unconfined recreation on approximately 13,000 acres.

Special Features

The sage grouse strutting ground and accompanying nesting sites, the outstanding scenic qualities associated with Blitzen River Canyon and Fish Creek Canyon, raptor nesting areas, crucial deer winter range and redband trout habitat (all identified as the area's special features) would be subject to disturbance from projected actions including increased use of vehicles in the area.

The increased use of vehicles in the study area would add disturbance to the crucial deer winter range and sage grouse habitat. Vehicles would continue to be limited to existing roads and ways due to an off-highway vehicle designation in association with the Steens Mountain Recreation Lands.

The riparian fencing project would improve redband trout habitat along upper Fish Creek due to decreased livestock pressure and related impacts to the riparian zone. This action would allow riparian vegetation to increase in density and vigor, providing more riparian cover, reducing the amount of siltation and resulting in more consistent water temperatures.

The rehabilitation of Kundert Reservoir would occur under this alternative, adding a warm water fishery to the area.

Conclusion: In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over 13,000 acres with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

The mineral withdrawal on 4,960 acres, as described in Section 1 under Interrelationships, for the Wild and Scenic River designation would continue to apply within the WSA.

The remaining 50,920 acres would be open to mineral entry.

Energy Development

No energy exploration and development is projected in the WSA due to the low potential for the occurrence of these resources in the area.

Conclusion: No impact to energy development is expected.

Mineral Development

Projected exploration for copper, molybdenum, gold and silver which have a moderate potential for occurrence would be permitted on 50,920 acres within the WSA. Due to the lack of sufficient geological evidence to justify an extensive exploration/development program, only casual exploration, without development, is projected.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

The WSA's vegetative composition, as described in the Vegetation section of the Affected Environment, would not substantially change, nor would the ecological status, which is currently in the mid-seral stage overall.

The 48 miles of existing ways and 15 miles of dead-end roads would remain open to use by vehicles and would not naturally revegetate.

The riparian fencing project along 1.4 miles of upper Fish Creek would substantially improve the riparian community by eliminating livestock use. Riparian species of chokecherry, willow and golden currant, as well as forbs and grasses, would be reestablished within the exclosure.

Vegetation would be removed on a total of 30 acres from development of projected range and wildlife projects.

Conclusion: Riparian vegetation would substantially improve on 1.4 miles of Fish Creek. Vegetation would be removed on 30 acres from projects.

Impacts on Wildlife

Adequate forage would be ensured in livestock allotment management plans in order to meet ODFW management objectives. The eight water developments projected to improve range management and livestock distribution would improve habitat for summering antelope and nongame species.

Maintenance of the Blitzen River riparian fence would be on foot or by use of vehicle. The upper part of Fish Creek would be excluded from livestock grazing to improve riparian habitat. The riparian habitat is currently in the mid-seral stage, but would improve within five years to the late seral stage (potential natural community) with the protection of the riparian exclosure. Fish habitat would improve from the current fair condition to good condition within 10 years due to the exclosure. This riparian exclosure would require construction of 1.9 miles of fence which would create an exclosure containing 1.4 miles of Fish Creek and an estimated 200 acres.

The 48 miles of ways and 15 miles of dead-end roads would remain open to vehicle use, and would allow for vehicle disturbance of antelope, deer and other wildlife during the hunting season to continue. Disturbance to wildlife during the rest of the year would be minimal.

Fishery studies, which currently utilize helicopters for access, would continue, providing data for fishery management.

The rehabilitation of the Kundert Reservoir would be completed to create a warm water fisheries habitat establishing a warm water fishery.

Conclusion: Habitat for game and nongame species and their existing levels of populations would be maintained throughout the area.

Fishery studies would continue providing data for ODFW and BLM to manage redband trout and their habitat. The rehabilitation of Kundert Reservoir for a warm water fishery would be completed.

Impacts on Watershed

The proposed fencing project along 1.4 miles of upper Fish Creek would exclude livestock from the streambank, which would promote stabilization of the gullies and improve water quality in the riparian area. Overall water quality would improve due to decreased water temperatures and sediment load reduction. There would be little change in the watershed over the rest of the area as other projects are not expected to affect perennial streams in the area.

Conclusion: Active gullies would begin to stabilize and water quality would improve by excluding livestock pressure within the 1.4 mile riparian exclosure. There would be little change in the watershed over the rest of the area.

Impacts on Livestock Grazing

Livestock grazing would remain at the current estimated level of approximately 4,561 AUMs within the portions of the three grazing allotments located within the WSA. The seasons of use and distribution of AUMs for all three allotments would remain as shown in Table 4.

Three spring developments, five reservoirs, a watering hole and 2 miles of fence would be constructed under this alternative. These developments would improve livestock distribution and range management and protect spring resources.

Vehicle use for livestock management and maintenance of the existing 33 miles of fence, 52 reservoirs, one spring development and a 2-mile irrigation ditch would continue on the existing 48 miles of ways and 15 miles of dead-end roads.

Conclusion: Livestock use would remain at the current estimated level of approximately 4,561 AUMs. Livestock distribution would improve from projects.

Impacts on Recreation Use

Vehicle-oriented recreation use would continue within the WSA. It would continue to be limited to the 15 miles of dead-end roads and 48 miles of ways, due to an off-highway vehicle designation in association with the Steens Mountain Recreation Lands. Ten miles of ways are already closed to motorized vehicles under the same off-highway designation. With the increasing popularity of the area, vehicle-oriented use of the existing roads and ways is expected to increase. Projected use patterns indicate that the current level of 1,800 visitor days per year would increase over time, to 4,500 visitor days per year.

Conclusion: Recreation use would increase over time from 1,800 visitor days per year to 4,500 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 4,561 AUMs. Overall recreation use would increase by 2,700 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $32,400 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by approximately $32,000.

Unavoidable Adverse Impacts of the Proposed Action

Under the Proposed Action, a 1.9 mile riparian fence and fishery studies would be foregone. Vehicle use would be precluded on 22,070 acres, reducing opportunities for those who prefer this type of recreation. There would be a slight increase in livestock management costs as a result of the closure of 8 miles of ways and 8 miles of dead-end roads.

In the nonsuitable portion, construction of one spring development, one waterhole, 2 miles of fence and the rehabilitation of Kundert Reservoir would directly disturb 15 acres and visually influence approximately 400 acres.

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity

Under the Proposed Action, most existing short-term uses would continue, with some added minor inconvenience and expense to the livestock operators resulting from the exclusion of vehicles for day-to-day inspection activities on 8 miles of roads and 8 miles of ways. The long-term productivity of the wilderness values on 23,070 acres would be preserved. On 34,210 acres not designated wilderness, the long-term ability of the area to produce wilderness values would be directly lost on 15 acres and visually influenced on 400 acres with surface disturbance from projected range and wildlife developments, with further declines from other uses over the long term.

Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, there would be no irreversible or irretrievable commitment of the wilderness resource or any other resources on 22,070 acres recommended suitable for wilderness designation.

In the portion of the WSA recommended nonsuitable, range and wildlife improvement developments would reduce wilderness values on 415 acres.

5. Wilderness Manageability and Rationale for the Proposed Action

Manageability of the Area as Wilderness

The Blitzen River WSA could be managed as wilderness under the all wilderness alternative; however, manageability problems would occur in the area, primarily because of private inholdings, boundary locations and adjacent private lands. Manageability problems could also result from continued vehicle use on the seven dead-end roads which would remain open under this alternative.

The location of the private land within the study area, and adjacent to the northeastern boundary, could also result in manageability problems with respect to recreation use. Most of these lands are not fenced or otherwise marked to indicate private ownership, making management difficult in some portions of the WSA, particularly within drainages and portions of the eastern boundary where recreation use would occur.

Under the enhanced wilderness alternative, the manageability of the area would be improved with acquisition of the inholdings and some lands along the boundary. Boundary identification problems could still occur along the extreme eastern side of the area, but those problems could be lessened with signing or fencing.

The acquisition of the mineral estate of split-estate lands and the 1,110 acres of private inholdings, as well as the inclusion of adjacent public land parcels, would eliminate the possibility of these lands being developed or used in ways that would be incompatible with wilderness management. Land acquisition would also eliminate the need for access to the private parcels.

The area would also be manageable as wilderness under the proposed action and partial alternatives. Most of the inholdings and boundary parcels fall within the areas recommended nonsuitable for wilderness. Acquisitions would eliminate problems with the private and split-estate parcels which are located in the Fish Creek drainage. Some manageability problems could occur where the canyons cross the study area boundary to private land along the perimeter of the WSA. These problems could be reduced with signing or other visitor information methods.

Rationale for the Selection of the Proposed Action

The area recommended as suitable for wilderness under the proposed action includes the canyons of both Fish Creek and the Donner und Blitzen River. In addition, the area contains some of the rolling hills east of the river including an area with relatively dense juniper cover in the northeastern corner of the WSA. The area recommended for wilderness designation is in a basically natural condition. It has outstanding opportunities for solitude and a variety of primitive types of recreation. Wildlife habitat and scenery in the suitable portion are special wilderness features.

This alternative would protect the area's wilderness values of naturalness, solitude, primitive and unconfined recreation and special features, within an area capable of being managed to preserve these qualities.

Conflicts with other resources are relatively minor within the suitable portion of the study area. The suitable area does have a moderate potential for the occurrence of metals, and several range improvements have been proposed for the northern portion of the area. However, these conflicts are not sufficient to outweigh the value of this area as wilderness.

Portions of the Blitzen River WSA recommended nonsuitable under the proposed action include most of the land on the western side of the river and much of the area in the southeastern corner.

On the western side of the study area, much of the land recommended as nonsuitable has a greater concentration of range developments than the remainder of the WSA. This concentration has an adverse effect on naturalness in this part of the study area. In addition, the opportunities for solitude within this area of concentrated developments would be further lessened by maintenance and livestock management activities at and around the developments.

The southwestern corner of the study area, while having few range developments, has a limited number of wilderness qualities. This portion of the WSA has some opportunity for solitude, but no outstanding recreation values. This area would not provide any significant contributions to the value of the area as wilderness and would be better suited to current uses and activities of the area than it would be as wilderness.

The southeastern portion of the WSA is not recommended as suitable for wilderness designation because the overall wilderness values of this area are not substantial in nature, nor do they require the protection provided by wilderness designation.

6. Summary and Analysis of Public Comments

Following is a summary of public comments specific to the WSA concerning adequacy of the analysis in this appendix, and responses to those comments. These comments were received both in writing and oral testimony at public hearings during the comment periods for the 1985 Draft EIS and the 1987 Supplement to the Draft EIS. Comments concerning the BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning statewide issues and analysis are addressed in the Statewide volume.

Comment: Kundert Reservoir development does not improve the area's wildlife habitat. **Response:** The rehabilitation of Kundert Reservoir would provide additional fish habitat and a water source for wildlife in an area where none presently exists.

Comment: Need to consider an alternative that combines several WSAs into a Steens Mountain complex. **Response:** The boundary roads on the north and south, which separate the Blitzen River WSA from two other study areas, are important access routes on Steens Mountain, providing access to recreationists, private landowners, livestock operators and BLM personnel. Closing the roads is not considered feasible.

The merger of the Blitzen River area with the Little Blitzen Gorge WSA (OR-2-86F) to the east is not analyzed because the road that separates these two WSAs provides necessary access to multiple-use public lands and private parcels along the north rim of Little Blitzen Gorge. Also, combining the areas would not substantially enhance manageability or wilderness values of either of the WSAs, because the shared portion of the boundary is far from the anticipated areas of primary recreation use of both study areas.

Comment: Wilderness designation will protect the threatened and endangered species of Cook's Lomatium. **Response:** Cook's Lomatium is located in Jackson County, in the western Oregon interior valley, and is not found within the Blitzen River WSA.

Comment: Impacts of the range developments are not significant in the western part of the WSA. **Response:** Existing range developments in the WSA include a spring development, a 2-mile irrigation ditch, 52 reservoirs and 33 miles of fencing. Grazing operators frequently use motor vehicles on the 48 miles of ways and 15 miles of dead-end roads to distribute salt and to monitor livestock. Horses are used for gathering and moving livestock. The total vehicle use by livestock operators is estimated to be 10 trips per year. As stated in the Affected Environment section under Naturalness, these features were found to not have an overwhelming influence on the naturalness of the WSA.

Comment: The roads in the proposed alternative should be left open for designated livestock permittees and administrative use only. **Response:** The naturalness of the area's deeply-cut Blitzen River Canyon and Fish Creek Canyon and their associated scenic values, as well as the rolling plateau and aspen groves and meadows in the eastern portions of the WSA, would be enhanced by the closure of 8 miles of ways and 8 miles of dead-end roads. This would result in some inconvenience and a slight additional expense to the livestock operators. Annual inspection and maintenance of 14 miles of existing fence would be done on foot or by use of riding and pack animals. Heavy equipment would be allowed as needed approximately once every 10 years to maintain the 19 existing reservoirs and one spring.

Comment: Wilderness values would be impaired because of frequent low-level military flights through the proposed wilderness area. **Response:** Currently, there is one low-level military training route (VR 1301) that directly crosses the proposed wilderness area. This particular training route is estimated to operate 540 missions each year at approximately 1,500 feet above ground level. The Bureau of Land Management is currently monitoring low-level aircraft flights over existing wilderness study areas to establish a database.

Table 1. Summary of Proposed Management Under Each Alternative, Blitzen River WSA (OR-2-86E)

Proposed Management	All Wilderness	Enhanced Wilderness	Proposed Action	Partial	No Wilderness/ No Action
Acres Designated as Wilderness	55,880	58,130	21,970	8,735	0
Acres Closed to ORV by Wilderness Designation [1]	55,880	58,130	21,970	8,735	0
Miles of Roads Closed	0	17	8	1	0
Miles of Ways Closed [2]	48	51	8	1	0
Acres of Full Fee Estate Acquired [3]	0	1,110	100	100	0
Acres of Mineral Estate Acquired [4]	0	2,070	1,115	620	0
Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation [5]	48,850	47,410	15,895	2,355	0
Structural Wildlife Projects Developed:					
Fences (miles)	1.4	0	0	1.4	1.4
Reservoir Construction and Stocking Project (number)	0	0	1	1	1
Structural Livestock Projects Developed:					
Reservoirs & Waterholes (numbers)	0	0	1	4	6
Springs (numbers)	0	0	1	3	3
Fences (miles)	0	0	2	2	2

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[1] Except for 48 miles of ways and 15 miles of dead-end roads, the WSA is already closed to cross-country use under an off-highway designated associated with the Steens Mountain Recreation Lands.

[2] 10 miles of ways are already closed under the off-highway designation associated with the Steens Mountain Recreation Lands.

[3] Upon acquisition, these additional lands would be incorporated into the wilderness area, closed to vehicle use, and withdrawn from mineral location and leasing.

[4] Upon acquisition of mineral estate, these lands would be withdrawn from mineral location and leasing.

[5] A total of approximately 4,960 acres in the WSA are already withdrawn from mineral location and leasing through congressional designation of the area as a Wild and Scenic River.

Table 2. Summary of Environmental Consequences of Alternatives, Blitzen River WSA (OR-2-86E)

Resource or Activity	All Wilderness	Enhanced Wilderness	Proposed Action	Partial	No Wilderness/No Action
Wilderness Values	Wilderness designation of 55,880 acres would result in the protection of the existing wilderness values and probable enhancement of those values.	Wilderness designation of 59,240 would result in the protection of existing wilderness values and enhancement of those values.	Wilderness designation of 22, 070 acres would result in protection and enhancement of the existing wilderness values in the area. The 34,210 acres recommended nonsuitable would be subject to projected resources activities that would both directly and indirectly impair wilderness values over approximately 400 acres, with further declines from other potential uses over the long term.	Wilderness designation of 8,835 acres would result in protection and enhancement of the existing wilderness values in the area. The 47,145 acres recommended nonsuitable would be subject to projected resource activities that would both directly and indirectly impair wilderness values over 900 acres, with further declines from other potential uses over the long term.	In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over 13,000 acres, with further declines from other potential uses over the long term.
Energy and Mineral	No impact to energy or mineral development.	No impact to energy or mineral development.	No impact to energy or mineral development.	No impact to energy or mineral development.	No impact to energy or mineral development.
Vegetation	The 48 miles of ways would naturally revegetate. Riparian vegetation would substantially improve along 1.4 miles of stream. Overall vegetation would remain unchanged.	The 51 miles of ways and 17 miles of dead-end roads would revegetate naturally. Riparian areas along Fish Creek would not recover. Overall vegetation would remain the same over the rest of the WSA.	The 8 miles of ways and 8 miles of dead-end roads would naturally revegetate. Riparian areas along 1.4 miles of Fish Creek would continue to slowly decline. Approximately 15 acres would be disturbed due to range and wildlife projects. Overall vegetation would remain basically the same in the rest of area.	The 1 mile of dead-end road and 1 mile of way would naturally revegetate. Riparian vegetation along 1.4 miles of stream would substantially improve. Vegetation would be removed on 25 acres from range and wildlife projects.	Riparian vegetation would substantially improve on 1.4 miles of Fish Creek. Vegetation would be removed on 30 acres from projects.
Wildlife	Wildlife habitat and populations would be maintained on 55,880 acres and enhanced in the 1.4-mile riparian area on Fish Creek. Fishery studies and construction of a warm-water fishery project would be foregone.	Wildlife habitat and populations would be maintained on 59,240 acres. Fishery studies and construction of a warm-water fishery project would be foregone.	Wildlife habitat and populations would be maintained on 22,070 acres designated wilderness. In the area recommended as nonsuitable, the rehabilitation of Kundert Reservoir for a warm-water fishery project would be completed.	Wildlife habitat and populations would be maintained on 8,835 acres designated wilderness. In the area recommended as nonsuitable, the rehabilitation of Kundert Reservoir for a warm-water fishery project would be completed.	Habitat for game and nongame species and their existing levels of populations would be maintained throughout the area. Fishery studies and rehabilitation of Kundert Reservoir for a warm-water fishery would be completed.
Watershed	Active gullies would begin to stabilize and water quality would improve within the 1.4-mile riparian exclosure. There would be Little change over the rest of the area.	Soil erosion, turbidity and declining water quality would continue on upper Fish Creek. Overall water quality in the WSA would remain unchanged.	Soil erosion, turbidity and overall water quality would continue to slowly decline on upper Fish Creek. Overall water quality would remain unchanged in rest of area.	Active gullies would begin to stabilize and water quality improve by excluding livestock within the 1.4-mile riparian exclosure. There would be little change in watershed over the rest of area.	Active gullies would begin to stabilize and water quality would improve by excluding livestock within 1.4-mile riparian exclosure. There would be little change in watershed over the rest of area.
Livestock	Livestock use would remain at 4,561 AUMs. Vehicle use on 48 miles of ways would be precluded with some inconvenience and slight additional expense to livestock operators.	Livestock use would remain at the current level of 4,561 AUMs. Vehicle use on 51 miles of ways and 17 miles of dead-end roads would be precluded with some inconvenience and slight increased expense to livestock operators.	Livestock use would remain at 4,561 AUMs. Livestock distribution would improve over the entire WSA due to projected range developments. Vehicle use on 8 miles of ways and 8 miles of dead-end roads would be precluded, causing slight inconvenience and some additional expense to livestock operators.	Livestock use would remain at 4,561 AUMs. Vehicle use would be precluded on 1 mile of way and 1 mile of dead-end road, causing slight inconvenience and increased cost to livestock operators.	Livestock use would remain at 4,561 AUMs. Livestock distribution would improve from projects.
Recreation Use	Recreation use would decrease from the current level of 1,800 visitor days per year to approximately 1,200 visitor days per year.	Recreation use would decrease from the current level of 1,800 visitor days per year to approximately 900 visitor days per year.	A net reduction of the area's overall recreation use level, from 1,800 visitor days per year to 1,200 visitor days per year would occur.	Wilderness designation would result in a reduction of the overall recreation use level, from 1,800 visitor days per year to approximately 1,500 visitor days per year.	Recreation use would increase over time from 1,800 visitor days per year to 4,500 visitor days per year.
Local Personal Income	Annual local personal income would decrease by approximately $7,000.	Annual local personal income would decrease by approximately $11,000.	Annual local personal income would decrease by approximately $7,000.	Annual local personal income would decrease by approximately $4,000.	Annual local income would increase by approximately $32,000.

Table 3. Classification of Energy and Mineral Potential, Blitzen River WSA (OR-2-86E)

Commodity	Area	Level of Potential	Level of Certainty
Metals (mercury, copper, gold, silver molybdenum)	See Map 6 Rest of WSA	H M	D B
Geothermal	Entire WSA	L	B
Uranium/Thorium	Entire WSA	O	C
Coal	Entire WSA	O	D
Oil/Gas	Entire WSA	L	B
Tar Sands/Oil Shale	Entire WSA	O	D
Limestone	Entire WSA	O	C
Bentonite	Entire WSA	L	A
Diatomite	Entire WSA	L	A
Zeolites	Entire WSA	L	A
Sodium	Entire WSA	L	A

Legend:

Level of Potential

O - No indication for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Moderate potential for accumulations of energy/mineral resource
H - High potential for accumulations of energy/mineral resource

Level of Certainty

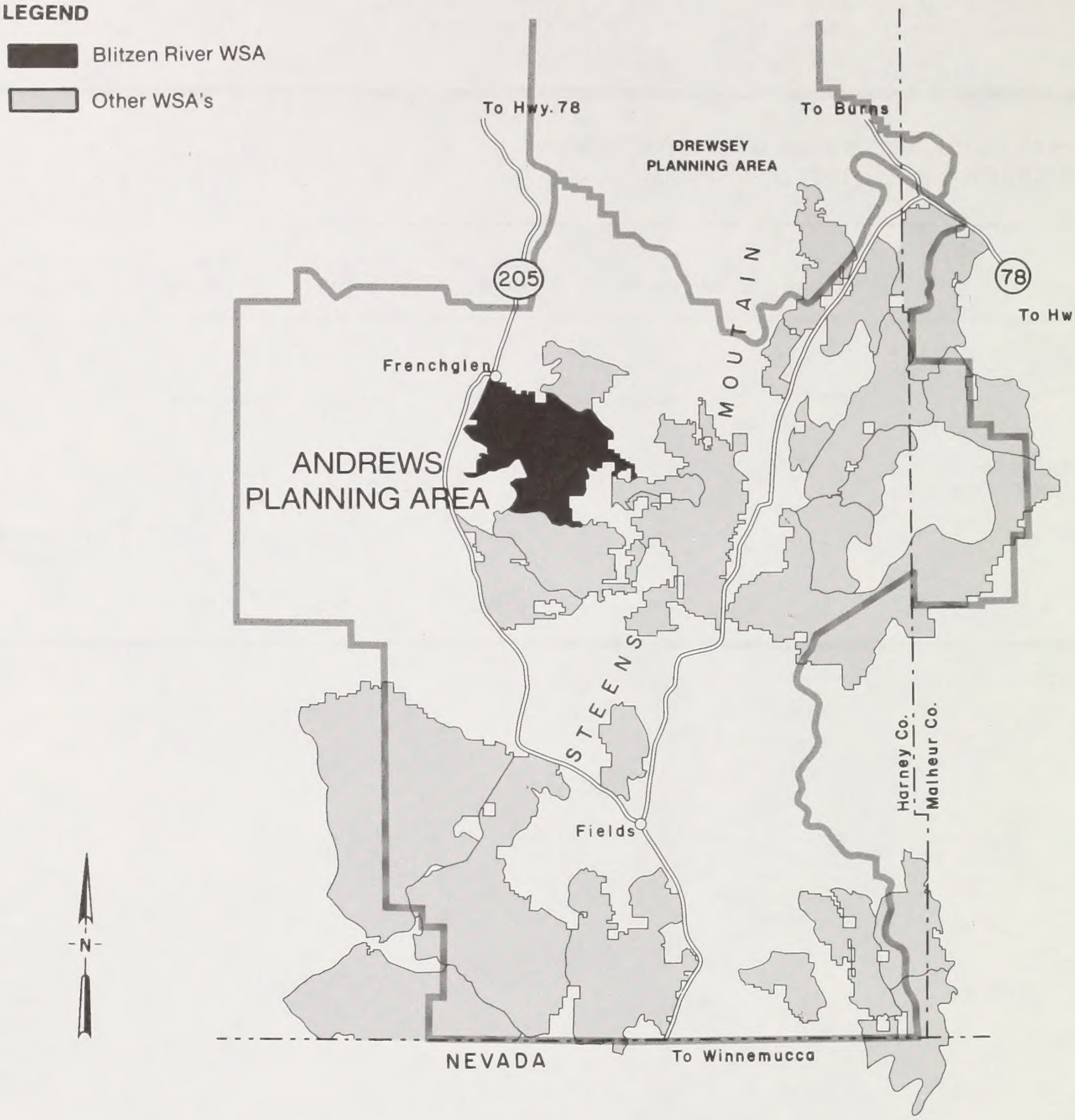
A - Insufficient data or no direct evidence
B - Indirect evidence available
C - Direct evidence but quantitatively minimal
D - Abundant direct and indirect evidence

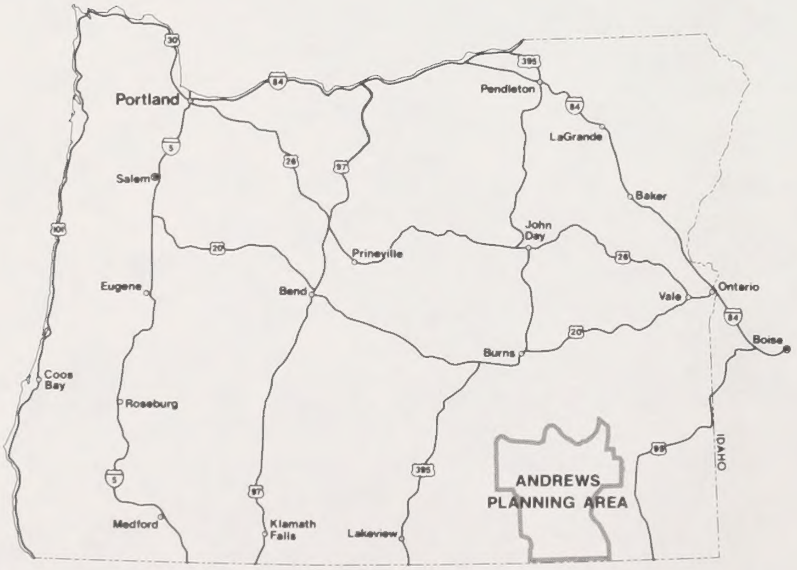
Table 4. Existing Livestock Use, Blitzen River WSA (OR-2-86E)

Grazing Allotment	Licensed AUMs in Allot.	Period of Use	Percent of Allot. in WSA	Current Estimated Use in WSA (AUMs)
N. Catlow (No. 6001)	8,106	04/01-10/31	0.2	7
S. Steens (No. 6002)	23,681	04/15-10/31	9	2,286
Fish Creek-Big Indian (No. 6003)	1,410	04/15-10/31	50	663
Frazier Field (No. 6006)	2,356	04/15-09/30	58	1,612
Totals	35,553			4,568

Table 5. Effects of Alternatives on Local Personal Income, Blitzen River WSA (OR-2-86E) (1981 price levels)

Item	Unit of Measure	All Wilderness	Enhanced Wilderness	Proposed Action	Partial Wilderness	No Wilderness/ No Action
CHANGES IN RESOURCE OUTPUTS						
Livestock Grazing	AUMs	No change	No change	No change	No change	No change
Recreation Use	RVD	-600	-900	-600	-300	+2,700
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES						
Livestock Grazing	$	No change	No change	No change	No change	No change
Recreation Use	$	-7,200	-10,800	-7,200	-3,600	+32,400
Total	$	-7,200	-10,800	-7,200	-3,600	+32,400





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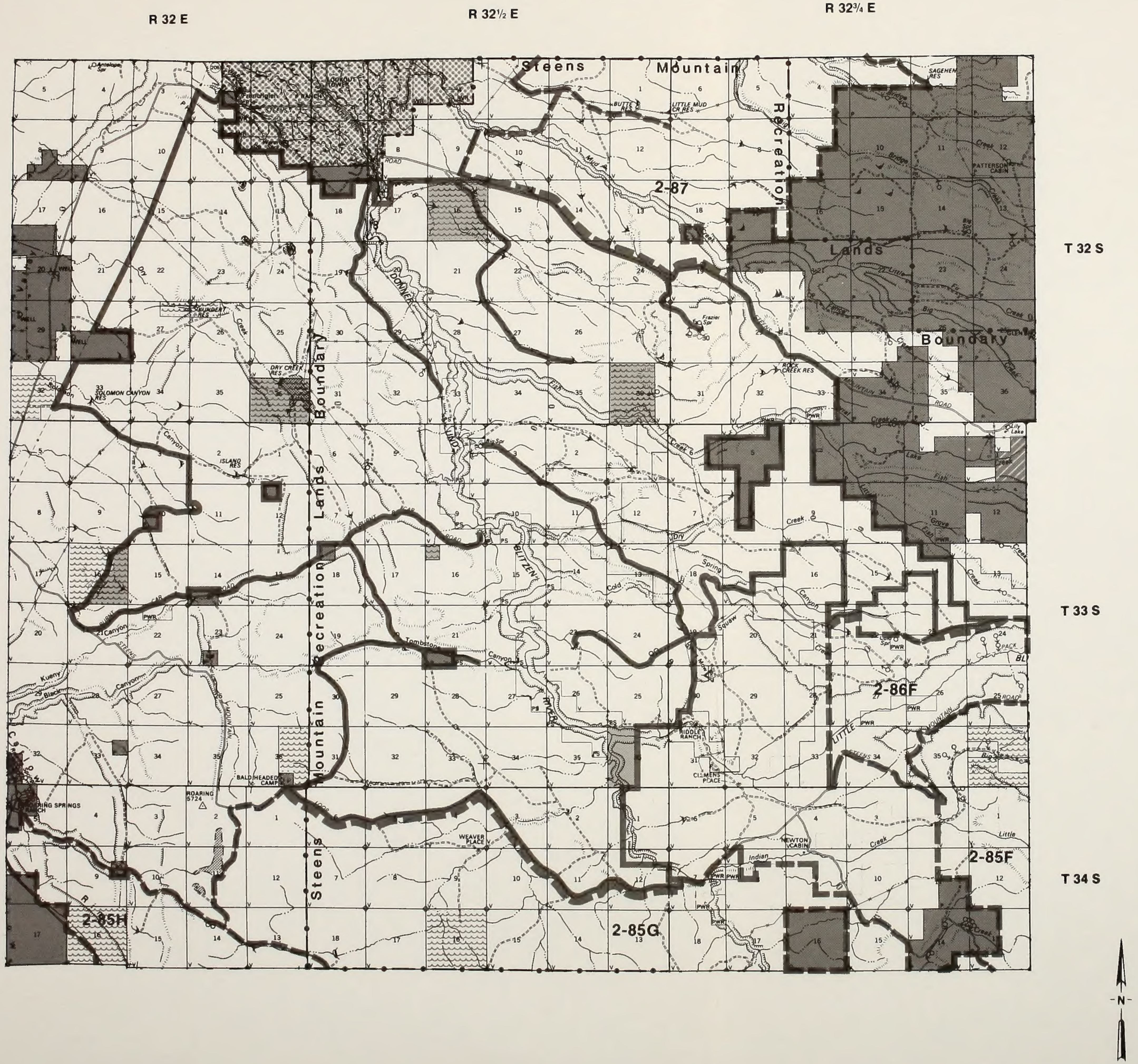
Blitzen River WSA
OR-2-86E

LOCATION MAP

10 0 10 MILES

MAP 1



LEGEND

- ▒ BLM Land Studied Under Section 202 of FLPMA (Other BLM Land in WSA Studied Under Section 603 of FLPMA)
- ━ Wilderness Study Area Boundary
- ╍ Boundary of Adjacent Wilderness Study Areas
- ☐ Bureau of Land Management
- ■ Private
- ▨ State
- ▩ National Wildlife Refuge
- ≋ BLM Surface-State or Private Subsurface (Split Estate)

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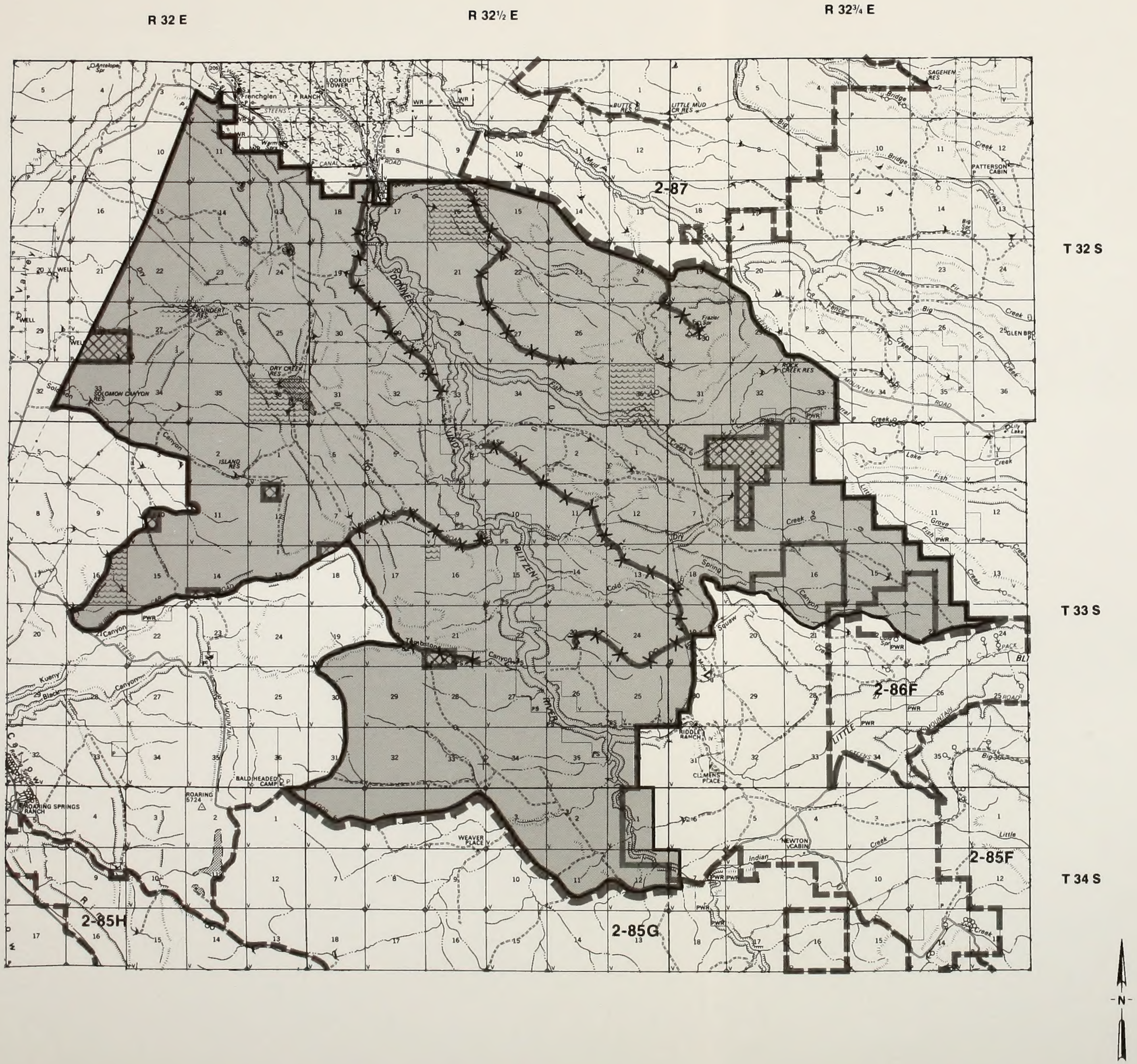
LAND OWNERSHIP

1 0 1 2 MILES

MAP 2



▬ Wilderness Study Area Boundary

▬ ▬ Boundary of Adjacent Wilderness Study Areas

☐ Recommended Suitable for Wilderness

▨ Non-Federal Land within Recommended Wilderness

▤ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness

✗—✗ Recommended Road Closure

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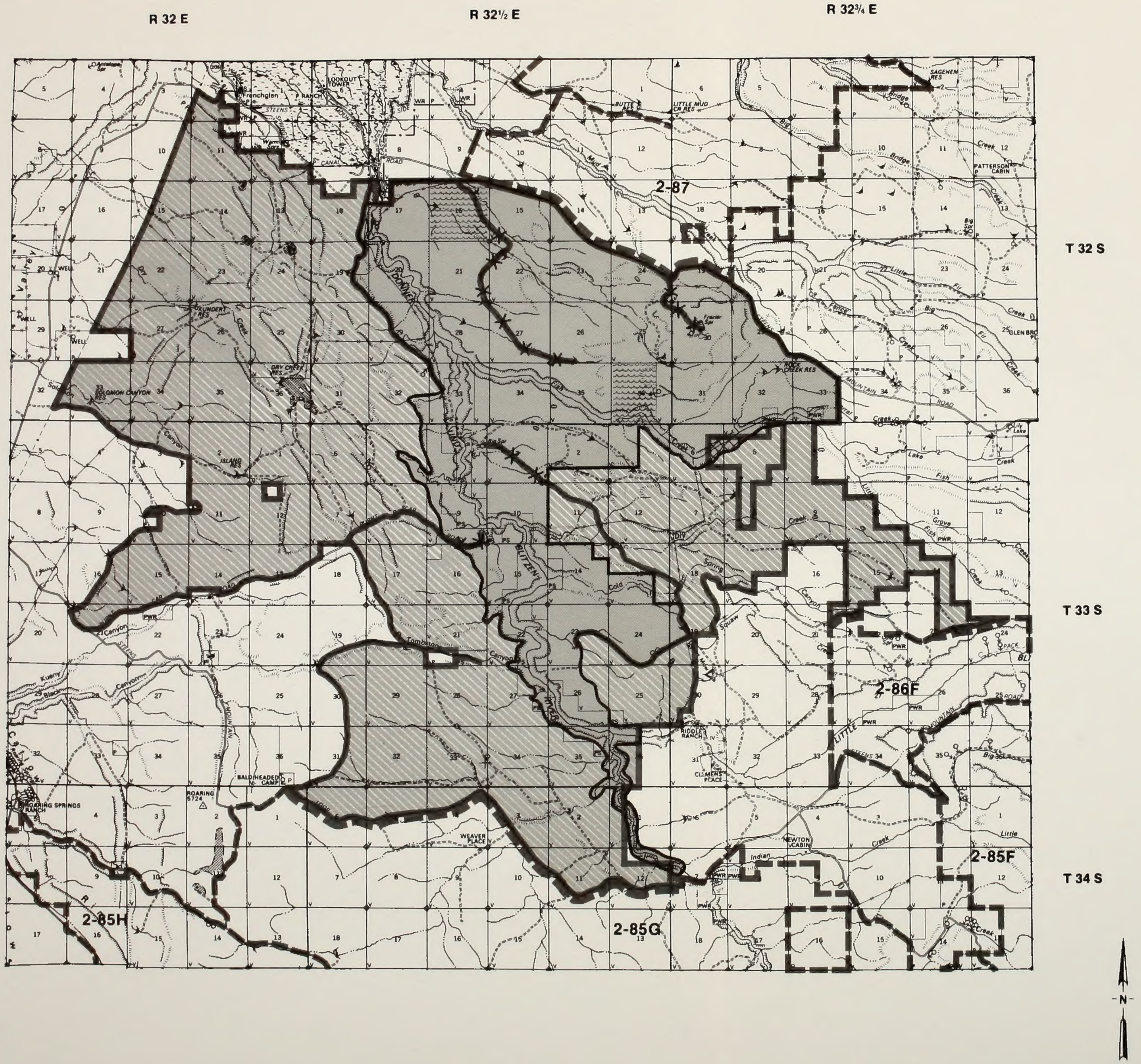
ENHANCED ALTERNATIVE

1 0 1 2 MILES

MAP 3



Wilderness Study Area Boundary

Boundary of Adjacent Wilderness Study Areas

▭ Recommended Suitable for Wilderness

▨ Recommended Non-suitable for Wilderness

▩ Non-Federal Land within Recommended Wilderness

▤ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness

✗ ✗ Recommended Road Closure

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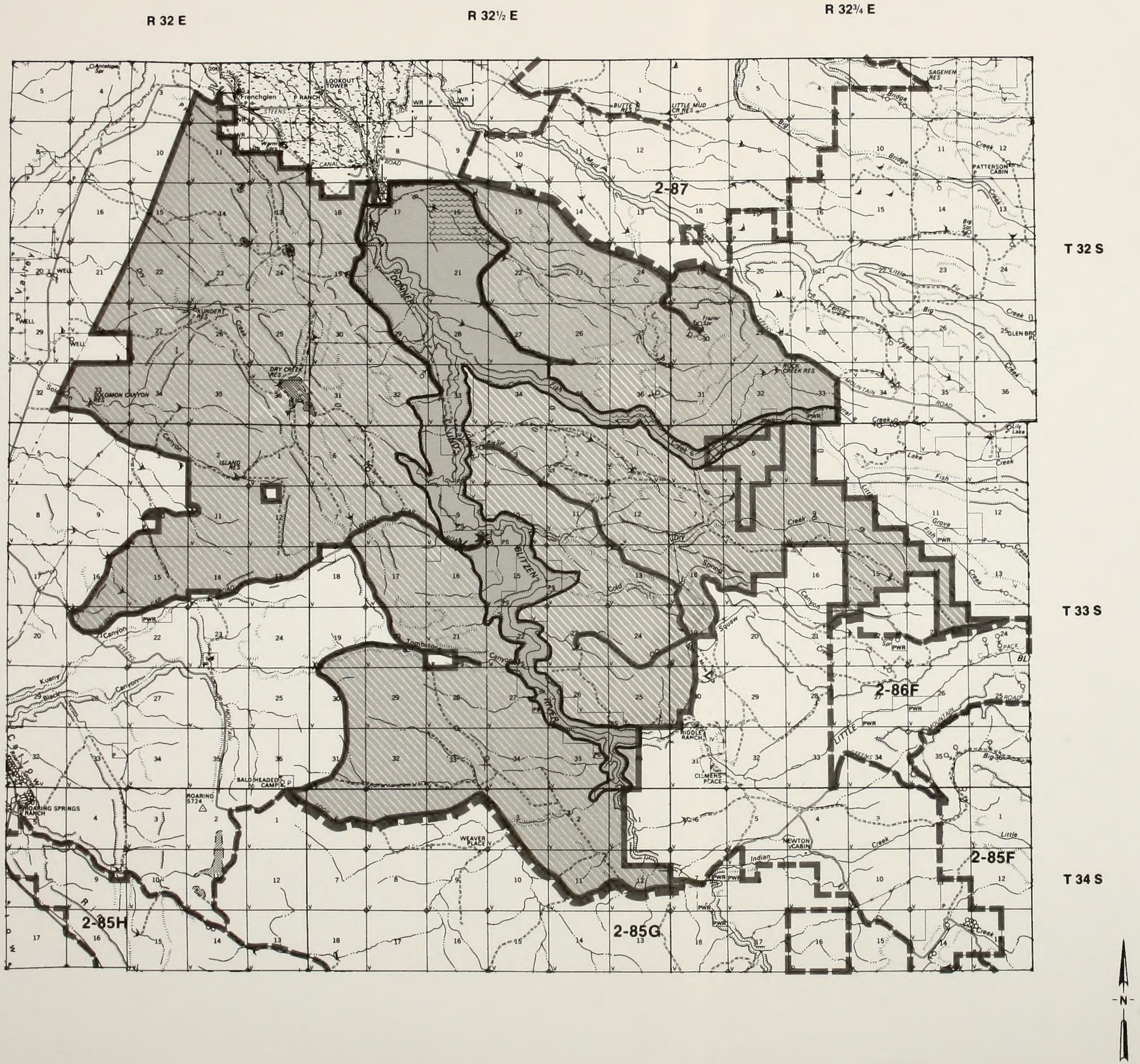
PROPOSED ACTION

1 0 1 2 MILES

MAP 4



▬ Wilderness Study Area Boundary

▬ ▬ Boundary of Adjacent Wilderness Study Areas

▢ Recommended Suitable for Wilderness

▨ Recommended Non-suitable for Wilderness

▩ Non-Federal Land within Recommended Wilderness

▤ Non-Federal Minerals (Split Estate) within Area Recommended for Wilderness

X—X Recommended Road Closure

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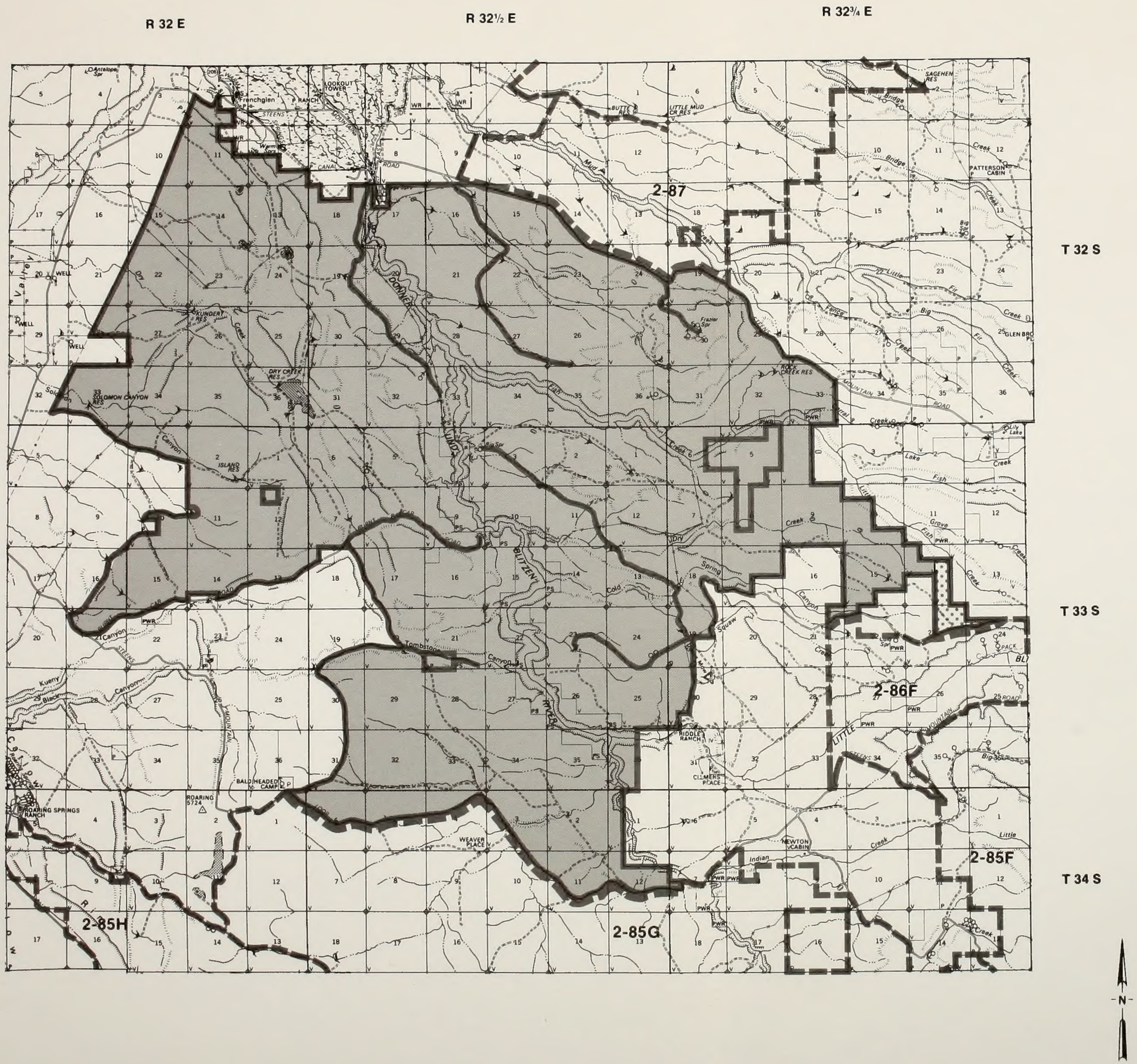
Blitzen River WSA
OR-2-86E

PARTIAL ALTERNATIVE

1 0 1 2 MILES

MAP 5



▨ **Moderate Potential**
(MB) for Mercury, Copper, Gold, Silver and Molybdenum

░ **High Potential**
(HD) for Mercury, Copper Gold, Silver and Molybdenum

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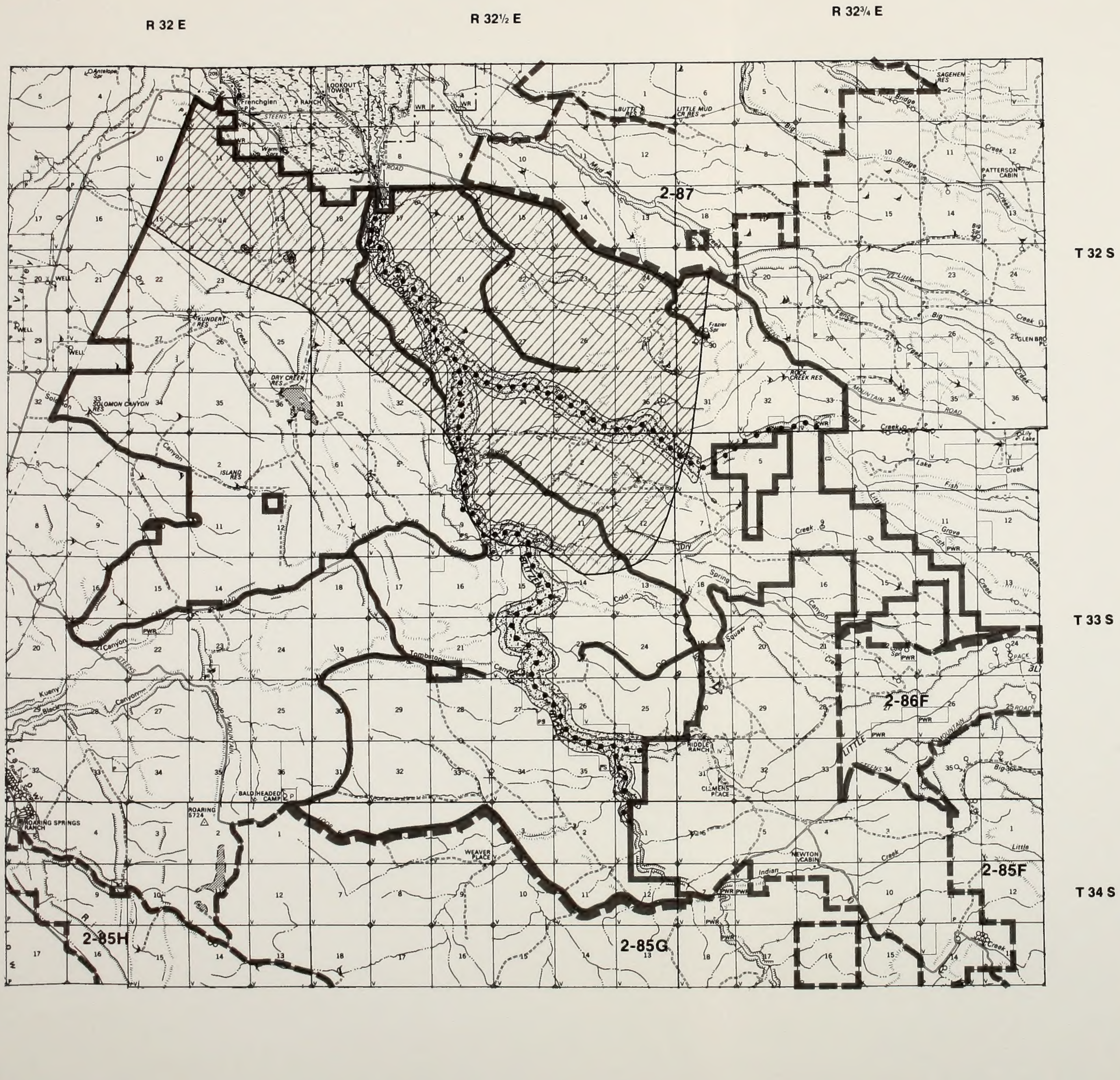
MODERATE OR HIGH POTENTIAL MINERAL OR ENERGY RESOURCES

1 0 1 2 MILES

MAP 6



• • • Redband Trout Habitat

▨ Raptor Nesting Area (includes Geologic Special Interest)

▨ Deer Winter Range

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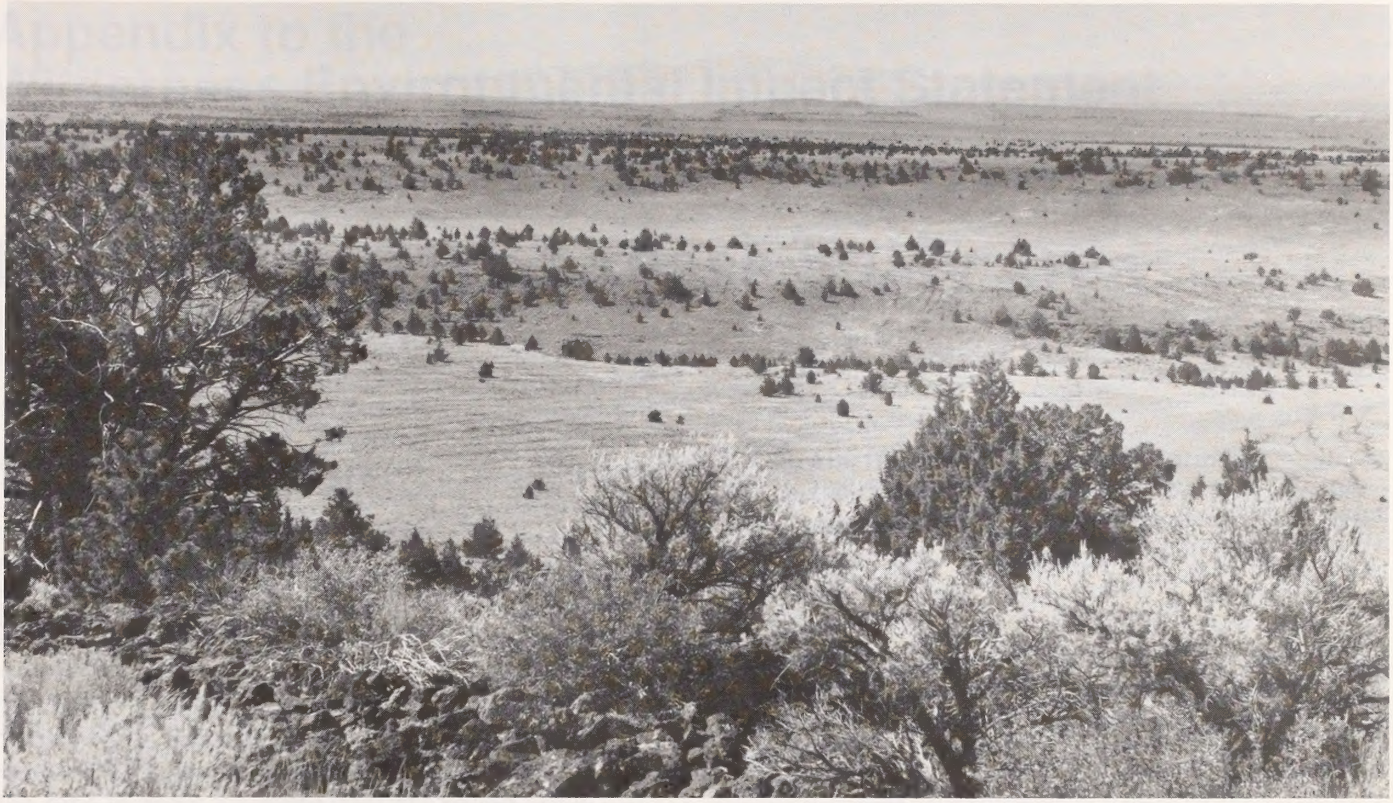
Blitzen River WSA
OR-2-86E

SPECIAL FEATURES

1 0 1 2 MILES

MAP 7



Blitzen River WSA, OR-2-86E. The western side of the study area from the ridgeline which parallels the western side of the Donnor und Blitzen River looking southwest. This area is recommended suitable under the enhanced and nonsuitable under the partial and proposed action alternatives. Views from this point are extensive in any direction: Beatty Butte is visible on the horizon nearly 35 miles away. September 1983.

Blitzen River WSA, OR-2-86E. The Donnor und Blitzen River in the center of the study area, looking south at the confluence with Fish Creek which enters the river in the foreground on the left. This area is recommended suitable under the enhanced, partial and proposed action alternatives. Sheer rock walls and stands of juniper characterize the river drainage. September 1983.

Appendix to the Wilderness Environmental Impact Statement for Oregon

Bridge Creek Wilderness Study Area (OR-2-87)

1. Introduction

General Description of the Study Area

The Bridge Creek Wilderness Study Area (WSA) is located about 55 miles south of Burns and 3.5 miles east of Frenchglen in Harney County (see Map 1). The area is about 3.5 miles east of Oregon State Highway 205 and is adjacent to the northern section of the Steens Mountain Loop Road.

The study area contains 14,545 acres of public land in a roughly square configuration (see Map 2). Within the study area is a 40-acre parcel of private land situated in the southeastern corner and 485 acres of split-estate land located in the northern portion.

The boundary line on the north and south is formed by BLM roads. The western boundary line is formed by BLM public land with crested wheatgrass seedings and the boundary line of the Malheur National Wildlife Refuge, while the eastern side of the study area is bounded entirely by private land. Also forming part of the western boundary line is a dead-end road which extends toward the center of the study area for over 2 miles. Two dead-end roads totaling 4 miles are located in the WSA.

The Bridge Creek WSA lies on the western face of the Steens Mountain Fault Block, sloping gently from east to west. The highest point in the study area is at the northeastern corner at 6,060 feet, while the lowest elevation is on the northwestern boundary at 4,260 feet.

The study area is deeply carved by two prominent drainages, Bridge Creek and Mud Creek, which dissect the study area from east to west; they are the primary topographic features of the WSA. Both are steep canyons with sheer, darkly colored rock walls which reach a maximum depth of 400 feet in Mud Creek. The average depth of the canyons is about 175 feet in Bridge Creek and 200 feet in Mud Creek. Mud Creek and the lower 4 miles of Bridge Creek are perennial streams. The upper portion of Bridge Creek is intermittent.

Most of the land which lies between the drainages is flat to gently rolling. A number of small drainages cut through the flatter terrain prior to entering Bridge or Mud Creeks.

The dominant vegetation in the Bridge Creek WSA is big and low sagebrush and western juniper. Riparian vegetation occurs along Mud Creek and the lower portion of Bridge Creek.

Interrelationships

The Bridge Creek WSA lies adjacent to the northern boundary of the Blitzen River WSA (OR-2-86E). The two study areas are separated by the northern portion of the Steens Mountain Loop Road. This well-used gravel road is maintained regularly by BLM to provide access to the higher elevations of the mountain.

The southern two-thirds of the Bridge Creek WSA, including most of the area south of Bridge Creek, lies within the BLM-managed Steens Mountain Recreation Lands. These lands, which include 193,856 acres on Steens Mountain, were designated by BLM in 1971 in cooperation with local groups and government entities as well as private landowners. The purpose of the designation is to maintain a multiple use management concept on the mountain, while protecting the area's natural condition.

The WSA is located within the ODFW Steens Mountain Wildlife Management Unit which contains 1,916 square miles of land. The WSA supports an estimated 1,000 wintering deer, 50 summering deer and 15 summering antelope. ODFW's management objective is 11,000 deer within the Steens Mountain Wildlife Management Unit. ODFW conducts deer herd

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The WSA is located within the ODFW Steens Mountain Wildlife Management Unit which contains 1,916 square miles of land. The WSA supports an estimated 1,000 wintering deer, 50 summering deer and 15 summering antelope. ODFW's management objective is 11,000 deer within the Steens Mountain Wildlife Management Unit. ODFW conducts deer herd composition counts by low-level aerial flight during the winter and spring. ODFW has not set management objectives for antelope. The goal for nongame wildlife is to maintain populations of naturally-occurring species at self-sustaining levels. The proposed action for this WSA conforms with ODFW's management goals for game and nongame wildlife species.

The United States Department of Agriculture (USDA) conducts a predator-control program to reduce predation of livestock, wintering deer and aquatic birds on nearby Malheur National Wildlife Refuge by aerial elimination of coyotes.

Harney County has not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study, and EIS planning, scoping and public review process. These issues concern both the effects of wilderness designation on existing and potential land uses or resources in the WSA, as well as the effects of existing and potential land uses on resources. Issues raised specifically for this WSA include:

- impact on energy and mineral exploration and development;
- impact on deer and elk winter range, antelope summer range, golden eagle nesting sites, sage grouse habitat and redband trout habitat;
- impact on livestock grazing use levels and management;
- impact on cultural resources, including the known Paiute campsites; and
- impact on recreation use-levels.

2. Description of the Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made.

The northern section of the Steens Mountain Loop Road forms the southernmost boundary of the WSA and is a standard gravel road. The dead-end road that enters the WSA from the west and the road that forms the northern boundary line are both low standard dirt roads.

The following alternatives are analyzed:

- all wilderness
- no wilderness/no action (proposed action)

An enhanced wilderness alternative which would combine Bridge Creek with the Blitzen River WSA (including acquisition of the private inholdings and mineral estate of the split-estate land and closure of the dead-end road) is not analyzed. Combining the two study areas would require closing the Steens Mountain Loop Road. This section of the Loop Road provides access for recreationists, private landowners, livestock users and BLM personnel; therefore, closure of the road is not considered feasible.

Closing the dead-end roads and acquiring the mineral estate and private inholding would neither significantly improve the area's manageability; nor would it be substantially different from the all wilderness alternative.

A partial alternative is not analyzed because there are no opportunities to eliminate resource conflicts by reducing the size of the area recommended suitable for wilderness and still provide an area which retains wilderness values.

All Wilderness

Under the all wilderness alternative, all 14,545 acres of public land in the Bridge Creek WSA would be recommended suitable as wilderness (see Map 2). For purposes of analysis, it is assumed that the private land and the mineral estate of split-estate lands would not be acquired. The dead-end road which enters the WSA from the western boundary would remain open to vehicle use.

Energy and Mineral Development Actions

Wilderness designation would prohibit surface-disturbing exploration and mineral development on 14,060 acres of public land within the WSA. A total of 485 acres of split-estate lands and 40 acres of private land would be open to mineral exploration and development.

Based on quantitatively minimal but direct evidence, diatomite has a moderate potential for occurrence in small portions of the WSA. However, there are no known deposits of sufficiently large ore bodies that would merit development. It is postulated that little, if any, exploration for mineral resources would occur on the split-estate lands and private land, because these lands are located outside of the area rated moderately favorable for diatomite.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and to be consistent with the guidelines established in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

An estimated 3 miles of fence would be constructed to protect 4.6 miles of Mud Creek from livestock use. Access for annual maintenance of the existing Bridge Creek riparian exclosure would be by vehicle and on foot.

Livestock Management Actions

Livestock use would remain at the current level of 1,246 AUMs. The primary grazing season is from April 1 to October 31.

Vehicle use for livestock monitoring and management would be precluded from 4+miles of ways. These ways are used for approximately 20 trips per year.

Management of livestock and maintenance of 6 miles of fences would be conducted mainly on horseback. Mechanized heavy equipment would be used on the average of once every 10 years to maintain each of the 21 existing reservoirs.

Recreation Management Actions

The entire 14,545 acres (excluding the dead-end road) would be closed to motorized vehicle use. Presently, vehicle use is limited by off-highway vehicle designation to the 4 miles of existing roads and 4 miles of existing ways. Current recreation use is estimated to be 300 visitor days per year.

No Wilderness/No Action (Proposed Action)

The no wilderness/no action alternative would recommend the entire WSA as nonsuitable for wilderness designation. It represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

The entire 14,585 acres of land in the WSA would be open to mineral and energy exploration and development. Based on quantitatively minimal but direct evidence, diatomite has a moderate potential for occurrence in small, scattered portions of the WSA. However, because a producing diatomite mine exists in the region (with ample reserves) it is postulated that there would be little, or no, exploration or development of the suspected diatomite deposits within the WSA.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and to be consistent with the guidelines in the BLM's Wilderness Management Policy. The primary manner in which habitat is managed to support existing wildlife populations is through establishment of livestock grazing allotment management plan goals to ensure sufficient forage for wildlife.

One wildlife project is planned. An estimated 3 miles of fence would be constructed to exclude livestock from 4.6 miles of Mud Creek. Access for maintenance of the Bridge Creek riparian exclosure would continue by vehicle and on foot.

Livestock Management Actions

Livestock use could increase to 1,766 AUMs. The primary grazing season would remain from April 1 to October 31.

Four reservoirs and 3 miles of pipeline would be constructed providing a projected increase in allocation of up to 520 AUMs of forage in the pastures as a result of improved management and livestock distribution.

Vehicle use for livestock management and project maintenance would continue on 4 miles of ways involving approximately 20 trips per year. Use of heavy equipment would be required once every ten years for 25 existing reservoirs and once every five years for 3 miles of pipelines.

Recreation Management Actions

Vehicle use would continue on 4 miles of dead-end road and 4 miles of ways, with some cross country travel also occurring. Most vehicle use would be restricted to existing roads and ways due to the topography. Three miles of ways located within the Steens Mountain Recreation Lands would remain closed in accordance with the Steens Mountain Recreation Area Management Plan. Current recreation use is estimated to be 300 visitor days per year.

Summary

Table 1 summarizes the projected management actions under each alternative.

Table 2 summarizes the environmental consequences of each alternative.

3. Affected Environment

This section discusses only those activities or resources that influence the character of the study area, or that may be affected by the alternatives.

Wilderness Values

Naturalness

The Bridge Creek WSA is in a relatively natural condition. The study area contains 32 unnatural features: 21 reservoirs, 4 fences totaling 6 miles, 6 ways totaling 7 miles and 1 crested wheatgrass seeding of about 1,200 acres. The majority of the developments are scattered throughout the WSA in the areas between the canyons, although a few reservoirs occur along the northern boundary. An estimated 12 percent of the study area is influenced by human developments.

The largest individual unnatural influence is a fire rehabilitation project in the northwestern corner of the WSA which was seeded to crested wheatgrass. The visual impact of this seeding does not extend much beyond the perimeter of the seeding itself, but within the seeded area the presence of drill rows creates a planted crop appearance.

Reservoirs scattered throughout the WSA create the next largest influence upon the area's naturalness. Although these features are small and individually present only a minor visual impact, collectively they influence 1,750 acres. Most of the reservoirs are located in small drainages or are surrounded by vegetation, which reduces their overall visibility.

The visual influence of the ways and fences is slight. Most of the vehicle ways are located within the relatively flat portions of the study area which are covered with sagebrush and the tracks are not readily seen. In addition, ways extending into the eastern portion of the WSA are frequently screened by juniper. Since none of the fences within the study area are bladed, the visual influence of these developments is also very minor.

Outside sights and sounds influencing the study area are few and are primarily the result of the boundary roads. The Steens Mountain Loop Road forming the southern boundary line is the outside development with the largest single influence. It receives heavy motor vehicle use during the summer, and its size and the amount of improvement it has received make it visible from a larger portion of the area than the other roads. The northern boundary road and the interior dead-end road have only a small visual influence because the topography screens these developments.

The seedings and fences which form the western boundary are visible for only a short distance into the WSA. They are (as are the other outside developments) on virtually the same plane from which they are likely to be viewed. Since this is generally a horizontal view, the impact of these developments is quite small. Most of the fences which mark the eastern boundary line are screened by juniper and are not a visual influence on any portion of the study area.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

Opportunities for experiencing solitude in the Bridge Creek WSA are outstanding. Topographic and vegetative screening, as well as the size of the study area, provide areas where visitors can find a secluded spot. However, this screening is primarily limited to Bridge Creek and Mud Creek canyons and the eastern portion of the WSA.

In the canyons of Bridge Creek and Mud Creek, the visitor is well screened by high canyon walls from the remainder of the study area. Topographic screening within the canyons themselves is also good; the numerous bends and turns in the drainages restrict long views. The tributary drainages to these larger canyons provide some screening for visitors. Although these drainages tend to be relatively shallow throughout most of their length, they enhance the opportunities for solitude by providing some topographic relief from the gently rolling nature of the remainder of the WSA.

The presence of juniper in the eastern half of this study area enhances the visitors ability to find solitude. Moderate to dense stands of juniper occur primarily along the drainage corridors. Although the density of the juniper cover lessens between the drainages, it is still sufficient to provide some screening for visitors. The major drainages also have a moderate amount of riparian vegetation which tends to enhance solitude.

The western portion of the WSA offers little screening. Single trees or small clumps of juniper occur only occasionally and the predominance of big and low sagebrush offers little cover.

The area provides outstanding opportunities for primitive forms of recreation, including day hiking, camping, backpacking, horseback riding, hunting and fishing. The opportunities for day hiking within the WSA are mainly associated with Bridge Creek and Mud Creek. Backpackers, horseback riders and campers would probably use the same areas.

Opportunities for hunting deer and elk are good in the eastern two-thirds of the area where there is adequate cover. Opportunities for antelope hunting are poor throughout the WSA due to the low number of animals within the area. Opportunities for chukar hunting are good, with the best hunting found along the rims of the canyons. The opportunities for fishing are good due to redband trout in Bridge Creek and Mud Creek.

Special Features

Special features include wildlife, cultural resources and scenic features, which add to the value of the study area as wilderness.

The WSA contains crucial deer winter range, a high-quality raptor nesting area and a sage grouse strutting ground. The majority of the study area is crucial deer winter range (see Map 4). Good raptor nesting sites are located along both Bridge Creek and Mud Creek canyons. Golden eagles commonly nest in these areas. Turkey vultures, American kestrels and great horned owls are other raptors which nest in these same areas.

The quality of scenery is good in this WSA because of the deep, winding and narrow creek canyons, a variety of colors (reds, browns, tans and greens), rugged rock outcroppings and clear, running streams in the canyon bottoms accented by green riparian vegetation.

A sage grouse strutting ground is located south of Bridge Creek on the west side of the study area. This is a site where sage grouse conduct an extensive courtship dance prior to mating. The same area is often used year after year, and the birds usually nest within a 2-mile radius of the strutting ground. These birds are a candidate species for Federal listing as Threatened or Endangered.

The WSA contains redband trout, a native fish with limited range. Redband trout is listed by the U.S. Fish and Wildlife Service as a Category 2 candidate for Federal listing as Threatened or Endangered.

Significant cultural resources have been found in the WSA. These include Paiute village sites which are important because of their good state of preservation and their ecological context. (See the Cultural Resources section for more information.)

Diversity in the National Wilderness Preservation System (NWPS)

According to the Bailey-Kuchler system of classifying ecosystems, the WSA is located in the Intermountain Sagebrush Province, and its potential natural vegetation is sagebrush-steppe communities.

The WSA contains four plant communities listed in the Basin and Range section of the Oregon Natural Heritage Plan. These include western juniper/big sagebrush/bluebunch wheatgrass and western juniper/big sagebrush/Idaho fescue, which occur on the steep slopes of drainages. In areas of lower topographic relief, the ecosystems are big sagebrush/ bluebunch wheatgrass and low sagebrush/Sandberg's bluegrass.

The study area is within five hours' driving time of one standard metropolitan statistical area with a population over 100,000: Boise, Idaho.

Energy and Mineral Development

The geology, energy and mineral resources of the Bridge Creek WSA were evaluated by interpreting existing literature, reviewing mining claims and mineral leasing records, and correlating rock units in the WSA with similar environments in other areas that are known to contain mineral deposits. Technical details of the evaluation are in a mineral resources assessment report, "Catlow Rim Geologic Resource Area (GRA OR-020-20), Harney County, Oregon," prepared by TERRADATA (a BLM contractor) and in a BLM report on the South Harney GRA.

The WSA is within the Catlow Rim Geologic Resource Area which has been classified according to a rating system that indicates both the potential for occurrence (geologic favorability) of certain minerals, as well as the quantity and quality of data on which the rating is based (confidence level). A description of the rating system is provided in the Statewide EIS volume.

The surface rocks of the WSA are composed mainly of Steens basalt which consists of numerous thin flows of olivine basalt with a cumulative thickness of several thousand feet and rare interlayers of tuff. Locally, the area is overlain with semi-consolidated lacustrine (lake) tuffaceous sediments and ash flow tuff.

Table 3 shows the energy and mineral classifications for the WSA. Map 3 shows where energy and mineral resources have moderate or high potential for occurrence in the WSA.

Energy Resources

Due west of the WSA is an area rated as moderately favorable for geothermal resources. The area consists of young volcanic rocks, three hot springs, and numerous deep-seated faults which have localized low-temperature geothermal potential which may be suitable for direct-use heat applications. The geothermal potential does not appear to extend into the WSA. The WSA does not contain any geothermal or oil and gas leases as of October 16, 1987.

Mineral Resources

Diatomite is rated as having a moderate potential for occurrence in portions of the WSA. The rating was based on the presence of tuffaceous lacustrine sediments similar to those in other Tertiary basins in southeastern Oregon which are known to contain diatomite.

Aside from abundant road aggregate sources, there are no known occurrences of mineral deposits within the WSA. There were no mining claims within the WSA, as October 16, 1987.

Vegetation

The major plant communities are big sagebrush/ bunchgrass, low sagebrush/ bunchgrass and juniper dominated sideslopes.

The community which is the most extensive is low sagebrush/bunchgrass. This community occurs on the flat, stony ridges between the drainages. Juniper invasion is very heavy in some areas, and on these sites western juniper dominates the overstory. The estimated successional stage is mid-seral. The probable potential natural vegetation species are low sagebrush, Sandberg's bluegrass and bluebunch wheatgrass.

The big sagebrush/bunchgrass community occurs in the western and northwestern portions of the WSA. Crested wheatgrass and squirreltail grow in conjunction with cheatgrass and annual forbs in a recently burned area in the northwest corner. The estimated successional stage of the burned area is early seral. The successional stage of the rest of the community is mid-seral. The probable potential natural species are bluebunch wheatgrass and a small amount of big sagebrush.

Western juniper communities dominate the slopes of Bridge Creek and Mud Creek. On the north slopes, the primary species are big sagebrush, Idaho fescue and bluegrass. In the eastern portions of the creek canyons, mountain mahogany is co-dominant with juniper on the northern slopes. Common species on the south slopes include bluebunch wheatgrass, Thurber's needlegrass, Sandberg's bluegrass and rabbitbrush, in addition to western juniper and big sagebrush. The estimated successional stage of these communities is mid- to late seral, and potential natural species are western juniper and big sagebrush with Idaho fescue on the northern slopes and bluebunch wheatgrass on the southern slopes.

There are small riparian areas along Bridge Creek and Mud Creek. Woody species include chokecherry, willow, alder and golden currant. The successional stage is 52 percent early, 25 percent mid- and 23 percent late seral. Potential natural vegetation species are not clearly known, but probably include the species previously mentioned as well as forbs and grasses. The riparian area's vegetative composition and ecological status, in areas not protected by exclosures, would continue to decline on the average and more particularly in the areas subject to severe or heavy livestock use.

There are no known threatened or endangered plant species within the WSA.

Wildlife

The Bridge Creek WSA provides a variety of habitats for wildlife species. Wintering mule deer make heavy use of the juniper, big sagebrush and low sagebrush habitats found in the southern part of the WSA, and moderate use in the remainder of the deer winter range. Light deer-use also occurs during the summer in this area. In springtime, pronghorn antelope use the seedings and burn area found at lower elevations, but move to upper elevations during the summer. Occasionally, elk use the WSA, generally during winter months.

Mud Creek and Bridge Creek canyons are important components of the wildlife habitat. Four golden eagle nests have been located near Bridge Creek and three near Mud Creek. At least one of these nests is usually active in each canyon. Other raptors nesting in the area include turkey vultures, American kestrels and great horned owls.

Songbirds include those commonly found near big sagebrush, low sagebrush, western juniper, riparian and cliff habitats. Some of these include Brewer's sparrow, western meadowlark, sage sparrow, mountain chickadee, robin, canyon wren and yellow warbler. Common mammals include deer mice, least chipmunk, badgers, black-tailed jackrabbits and coyotes, with bushy-tailed woodrats near rimrocks and beaver near streams. One sage grouse strutting ground has been located just south of Bridge Creek in the northwestern part of the WSA. Chukars are found in the rocky canyons and nearby uplands. Wintering Canada geese feed on the seedings and burn areas, mostly north of Bridge Creek and within 2 miles of the Malheur Refuge Boundary.

Riparian habitat occurs along 12.8 miles of stream courses within the WSA. The condition of riparian habitat along 2.6 miles of Mud Creek and 4.1 miles of Bridge Creek is poor. Habitat along 3.1 miles of Mud Creek is in fair condition and the remaining 3.0 miles of Bridge Creek is in good condition. Redband trout are found in 10.2 miles of Bridge Creek and Mud Creek.

Watershed

The WSA contains about 10.2 miles of perennial streams which are evenly split between Mud Creek and Bridge Creek. The upper portion of Bridge Creek is intermittent. Water quality is good where existing exclosures on Bridge Creek keep livestock away from the stream, but it is poor on the balance of Bridge Creek. The lower portion of both creeks have some erosion problems caused by past heavy livestock use.

BLM maintains three exclosures along Bridge Creek to improve riparian habitat along 3.2 miles of stream.

Livestock Grazing

Portions of three grazing allotments (Krumbo, Frazier and Mud Creek) lie within the WSA. Table 4 summarizes existing livestock use in AUMs and the seasons of use. Existing livestock developments in the WSA include 21 reservoirs and 6 miles of fence.

During the grazing season (April 1 to October 31), one livestock operator uses motor vehicles on roads and ways approximately 20 times per year for fence and reservoir inspection and maintenance, to check on livestock and to distribute salt. Horses are used to move and gather livestock. The 21 reservoirs are maintained approximately once every 10 years with heavy equipment.

There is some underused forage in the Krumbo Allotment portion of the WSA due to a lack of water in the area of a seeding developed as a result of wildfire rehabilitation.

Cultural Resources

Remnants of several Paiute villages are located in the western portion of the WSA, generally in the lower elevations of the Steens Mountain Fault Block. The villages reflect prehistoric adaptation to diverse upland and riverine natural resources during seasonal or longer-term occupations. House circles and tools for hunting and plant food processing are present in the area. These sites remain unstudied and are well-preserved.

Recreation Use

Existing recreational use in the Bridge Creek WSA is primarily oriented toward hunting deer, antelope, elk and chukar, with moderate levels of activity for each. Fishing use within both Bridge Creek and Mud Creek is low, with most of the use concentrated in Bridge Creek. Access into the area for hunting and fishing does not generally require the use of motor vehicles. However, in the area north of Bridge Creek, roads are commonly used to gain access to the remainder of the area. Some off-highway vehicle use occurs in the flatter portions of the WSA, outside of the area currently under limited vehicle designation imposed by the Steens Mountain Recreation Area Management Plan.

Currently, the Bridge Creek WSA receives relatively low primitive recreation use that is not oriented to fishing or hunting. This is probably due to several factors, including the lack of attractions in the area and the relatively difficult access. Current recreation use is probably related to the WSA's proximity to the more attractive, and much more heavily used, portions of the Steens Mountain area. Consequently, recreation use within the WSA is probably dependent upon use in the remainder of the Steens Mountain Recreation Lands.

Local Personal Income

Livestock use at the current level of 1,246 AUMs and recreation use totaling 300 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing levels amounts to approximately $14,952 for livestock grazing, and $3,600 related to recreation use of the WSA, for an overall total of $18,552. The Statewide EIS volume discusses the term local personal income and how income figures have been derived.

4. Environmental Consequences

Introduction

This section discusses the environmental consequences of implementing each of the alternatives. Resources and activities not significantly affected by any of the alternatives are not discussed. The Statewide volume also discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness: 14,545 acres
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

All of the WSA would be designated wilderness, and wilderness values within the entire 14,545 acres would be protected by legislative mandate. Wilderness values of naturalness, solitude and primitive and unconfined recreation would be preserved. Special features including raptor nesting habitat, crucial deer winter range, a sage grouse strutting ground, scenic features associated with Bridge Creek and Mud Creek and Paiute Indian village sites would be protected.

Naturalness

The naturalness of the area's deeply-cut creek canyons and rolling plateau would be slightly enhanced by the closure of 4 miles of ways (total 7 miles closed) and elimination of some motorized vehicle use amounting to 100 visitor days per year. Although the dead-end road would remain open, the elimination of the ways and prohibiting of off-highway vehicle use would improve the overall naturalness of the area by allowing the ways to revegetate to an eventual unbroken sagebrush, grass and juniper landscape.

Reservoir maintenance would require heavy equipment access on 4 miles of ways approximately once every 10 years for each existing reservoir. This infrequent amount of use would not prevent the ways from revegetating.

The proposed construction of the riparian fence project along Mud Creek would probably be allowed under wilderness designation because it would improve the riparian habitat zone by allowing vegetation of the area to return to a more natural state, improving stream cover for fish habitat, as well as reducing soil erosion and improving overall water quality. The fence itself, as an unnatural feature, would influence approximately 300 acres within the immediate area along 4.6 miles of Mud Creek.

Solitude

Opportunities for solitude provided by the deeply-incised canyons, shallow drainages and juniper patches would improve slightly with the closure of 4 miles of ways and elimination of 100 visitor days of vehicle use; however, with the continued use of the dead-end road such vehicle disturbance would not be eliminated completely.

Maintenance of existing facilities requiring vehicle use approximately once every 10 years for reservoirs, would cause minor local impairment of solitude.

Construction of the riparian fencing project would also cause a short-term and localized disturbance of solitude during the construction phase. However, in the long term, solitude will be enhanced by reintroduction of more vegetative structure and screening along the creek bottom.

Primitive and Unconfined Recreation

The opportunities for participating in primitive recreation in the study area would be slightly improved under this alternative because of a reduction in vehicle use; however, vehicle use would not be entirely eliminated with the dead-end road remaining open. The quality of hunting, fishing, horseback riding, day hiking, backpacking and camping would improve with the removal of vehicles from ways and natural revegetation of these ways. A more primitive and natural setting would be provided. Fencing of 4.6 miles of riparian area which would exclude livestock and allow riparian vegetation to recover, would enhance wildlife viewing, hunting and fishing opportunities along and near Mud Creek. Deer, bird and fish populations would increase, providing improved recreational opportunities. Wilderness designation is not expected to produce a substantial increase in primitive recreation activities not related to hunting. Most backpacking and horseback riding would take place adjacent to Mud Creek and Bridge Creek drainages; however, a slight increase in these primitive recreation activities is not expected to significantly impact these water sources.

Special Features

The potential for impacts to plant and animal communities and species of special interest by incidental ORV use would be reduced by the elimination of 100 visitor days of vehicle use within the WSA. These impacts include soil compaction and rutting (causing soil erosion), minor seasonal disturbance of sage grouse and antelope, impairment of scenic vistas and possible damage or destruction of cultural sites.

By excluding livestock, the riparian fence along Mud Creek would result in restoration of riparian vegetation, improved water quality, increased wildlife habitat, improved scenic qualities and improved redband trout habitat.

The significant cultural resources of Paiute village sites, which are in a good state of preservation, would receive a slight increase in protection due to the reduction of vehicular access under this alternative. These village sites are currently protected by Federal law and would remain protected by law without wilderness designation.

The special features would also receive future protection by the withdrawal of 14,060 acres of public lands for mineral leasing and development. There are currently no leases within the study area for mineral development or plans on the split-estate and private lands for future development.

Conclusion: Wilderness designation of the entire 14,545 acres in the Bridge Creek WSA would result in the protection of existing wilderness values and probable enhancement of those values.

Impacts to Energy and Mineral Development

Except for split-estate lands, areas designated wilderness would be closed to mineral exploration and development. Under this alternative, 14,060 acres would be withdrawn, including 757 acres rated as having a moderate potential for occurrence of diatomite.

Energy Development

No energy exploration and development is projected in the area due to the low potential for occurrence of energy resources in the WSA.

Conclusion: No impact to energy development is expected.

Mineral Development

Within the area designated wilderness, substantial exploration or mineral development cannot be projected with any certainty at this time due to the lack of extensive geological surveys and investigations. It is postulated that little, if any, exploration for mineral resources would occur on the split-estate and private lands, because these lands are located outside of the areas rated moderately favorable for the occurrence of diatomite.

Conclusion: No impact to mineral development is expected.

Impacts on Vegetation

Wilderness designation would not introduce any significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the vegetative section of the Affected Environment, would not substantially change nor would the ecological status, which is currently in the mid-seral stage overall.

The 4 miles of ways, once closed to vehicle use, would naturally revegetate within approximately two growing seasons with annual forbs and grasses. The dead-end roads would remain open and would not revegetate due to continued use by vehicles.

The riparian fencing project along 4.6 miles of Mud Creek would substantially improve the riparian plant community within this exclosure by eliminating livestock use. Riparian species of chokecherry, willow, alder and golden currant, as well as forbs and grasses, would become reestablished within the exclosure.

Conclusion: The 4 miles of ways (totaling 4 acres) would naturally revegetate. Overall vegetation would remain unchanged. Riparian vegetation along 4.6 miles of Mud Creek would substantially improve.

Impacts on Wildlife Habitat

Wildlife habitat would be preserved under the all wilderness alternative.

Approximately 1,200 acres of the WSA has had the sagebrush cover removed by wildfire, herbicides and mechanical means. Encroachment of browse, primarily sagebrush, would occur under this alternative. This would allow a marked improvement in deer winter range, sage grouse habitat and the habitat of many nongame species due to the increase in browse density and height.

Under this alternative, the proposed riparian fencing along Mud Creek would be appropriate because it would correct the adverse effects of human influence. The density and vigor of riparian vegetation along Mud Creek would increase and bank erosion would be reduced. Increased shrub cover would increase thermal and nesting cover and allow reduced water temperatures during the summer months. Overall water quality would improve due to decreased water temperatures and sediment reduction.

Annual maintenance of existing riparian fences may be reduced due to increased inaccessibility, possibly resulting in cattle intruding into riparian areas. This would deteriorate 2 miles of riparian areas and cause a decline in populations of riparian-dependent species and fish habitat.

Conclusion: Wildlife habitat and populations would be maintained and continue to improve on 14,545 acres designated wilderness. Riparian and fish habitat would be improved along 4.6 miles of Mud Creek by excluding livestock. Maintenance of the riparian fences along Bridge Creek would become more difficult, allowing possible cattle intrusion into an estimated 2 miles of riparian habitat.

Impacts on Watershed

The proposed riparian fencing, which would exclude cattle from the 4.6 miles of lower Mud Creek, would allow water quality to improve and the erosion problems to stabilize.

Maintenance of existing riparian fences may be reduced due to increased inaccessibility, possibly resulting in cattle intruding into riparian areas. This would deteriorate 2 miles of riparian areas and cause a decline in riparian vegetation. Overall water quality could decline due to increased water temperatures and siltation from bank erosion.

Conclusion: Water quality and streambank stability would improve substantially within the exclosure on Mud Creek. The existing riparian exclosures could deteriorate and result in declining water quality. The remainder of the study area would remain basically unchanged.

Impacts on Livestock Grazing

Livestock grazing use would remain at 1,246 AUMs as shown in Table 4. The season of use would remain from April 1 to October 31.

Vehicle use for livestock management and facility inspection and maintenance on 4 miles of ways would be precluded. Annual inspection and maintenance of 6 miles of fences, not accessible to open roads, would be done on foot or by use of riding and pack animals. This would result in some inconvenience and a slight additional expense to operators. Maintenance of the 21 reservoirs would require use of heavy equipment approximately once every 10 years.

Conclusion: Livestock use would remain at 1,246 AUMs. Vehicle use on 4 miles of ways would be severely limited.

Impacts of Recreation Use

Except for the 4 miles of roads that would remain open under the all wilderness alternative, the entire 14,545 acres of the WSA would be closed to motorized vehicle recreation use, including 4 miles of ways. This closure would reduce vehicle-oriented recreation use in the WSA by 100 visitor days per year.

Primitive recreation would be expected to increase by 100 visitor days per year and would offset the reduction in vehicle-oriented recreation. Some vehicle-oriented recreation use is expected to be displaced into other areas. Some vehicle-oriented recreationists, primarily hunters, may continue to use the WSA, traveling by foot or by horseback. Projected use patterns indicate that the current level of 300 visitor days per year would increase over time, to 500 visitor days per year.

Conclusion: Recreation use would increase from the current level of 300 visitor days per year to approximately 500 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 1,246 AUMs. Overall recreation use would increase by 200 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $2,400 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by approximately $2,000.

No Wilderness/No Action (Proposed Action)

Recommended suitable for wilderness: 0 acres
Recommended nonsuitable for wilderness: 14,545 acres

Impacts on Wilderness Values

Under the no wilderness alternative, the entire 14,545 acres would not be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation and the study area's special features, including deeply-cut canyons and their stark rock formations, a sage grouse strutting ground, varied scenery, redband trout habitat, excellent raptor habitat and opportunities for cultural studies, would be subject to the effects of future management actions. Projected actions include continued vehicle use for livestock management and facility inspection/maintenance, construction of range improvements (4 reservoirs and 3 miles of pipeline) and 3 miles of riparian fencing, and continued recreational vehicle use, limited mainly to existing roads and ways.

Naturalness

The construction of the livestock developments, consisting of four reservoirs and 3 miles of pipeline, and the accompanying pattern changes of livestock usage in the area, would impair naturalness on 20 acres in specific locations, with approximately 400 acres of visual (indirect) influence.

Expected increased vehicle use on 4 miles of roads and 4 miles of ways would increase the impacts of vehicle tracks and usage upon naturalness on approximately 1,400 acres. Three miles of ways located in the Steens Mountain Recreation Lands would remain closed.

The riparian fence along Mud Creek would have the same impact as under the all wilderness alternative. It would improve the natural appearance of 4.6 miles of riparian area, but add the unnatural feature of the fence, influencing approximately 300 acres.

Solitude

Opportunities for solitude would be impacted as a result of increased vehicle use and access and the development of range improvement projects.

Continued vehicle use on 4 miles of ways and 4 miles of dead-end road and the possibility for cross-country use creating new ways and human activity associated with the projected management actions would cause repeated, but short-term, local impairment to solitude opportunities adjacent to the projects. Topography will limit most cross-country travel to the relatively flat plateau area of the WSA. Solitude opportunities in the rest of the WSA would remain.

Primitive and Unconfined Recreation

Vehicle use would continue and is expected to increase on 4 miles of existing roads and 4 miles of ways. Such use would increasingly intrude upon primitive, nonmotorized recreation opportunities in the vicinity of roads and ways in the WSA.

Special Features

The raptor habitat, sage grouse strutting ground and accompanying nesting sites, crucial deer winter range, redband trout habitat, scenic values and cultural sites identified as special features would be subject to disturbance and impacts from development of other resources and accompanying changes in land use patterns.

The continually increasing use of vehicles in the study area would increase the potential for slight impacts to crucial deer winter range and sage grouse habitat. Monitoring and mitigation measures could minimize or eliminate some of the impacts.

The significant cultural resource of Paiute village sites, which are in a good state of preservation and important for their ecological context, would remain accessible to continual, and slightly increasing, use of vehicles within the study area. These sites are currently protected by Federal law and would remain protected by law under this alternative. Research and management activities could be carried out more readily by vehicular access.

Conclusion: Projected resource activities and developments would directly impair wilderness values over approximately 20 acres from surface disturbance and over approximately 2,100 acres from indirect influences, with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

The entire WSA would remain open to mineral entry.

Energy Development

No energy exploration and development is projected in the area due to the low potential for occurrence of energy resources in the WSA.

Conclusion: No impact to energy development is expected.

Mineral Development

Within the study area, substantial exploration or mineral development cannot be projected at this time due to the lack of extensive geological surveys and investigations. The existence of a diatomite mine in the southeast Oregon area, which has ample reserves, indicates that exploration of suspected diatomite deposits within the WSA is unlikely to occur. It is postulated that little, if any, exploration for mineral resources would occur on the split-estate lands and private land, because these lands are located outside the areas rated moderately favorable for the occurrence of diatomite.

Conclusion: No impact to mineral exploration and development is expected.

Impacts on Vegetation

Wilderness designation would not introduce any significant new conditions or influences to the WSA as a whole. The vegetative composition, therefore, as described in the vegetative section of the Affected Environment, would not substantially change now would the ecological status, which is currently in the mid-seral stage overall. Because of the projected range improvements and the increased availability of water sources within this area, the 1,200-acre crested wheatgrass seeding (located in the northwestern portion of the WSA) would see a substantial increase in use by livestock. This area is currently in the early seral stage.

The range improvements would be constructed (4 reservoirs and 3 miles of pipeline), disturbing 20 acres of surface area and corresponding vegetative cover. These range improvements would alter current grazing patterns and areas of use. Because of water developments established in the upland area, livestock would utilize the existing forage (520 AUMs) located in the northwestern corner of the WSA. These developments would also alleviate the current livestock pressure in the riparian areas.

The 3-mile riparian fencing project along 4.6 miles of Mud Creek would be constructed. This project would substantially improve the riparian plant community within this exclosure by eliminating livestock use. Riparian species of chokecherry, willow, golden currant, and alder would increase in density and size in this area.

The 4 miles dead-end roads and 4 miles of ways would not revegetate due to continued use by vehicles. Three miles of ways located within the Steens Mountain Recreation Lands would remain closed, and would continue to naturally revegetate with forbs and grasses and eventually with sagebrush.

Conclusion: Range improvements would result in a direct loss of vegetation on 20 acres. Riparian vegetation within the exclosure would substantially improve. There would be a 520 AUM increase in utilization, with a corresponding decrease in residual ground cover, over approximately 1,200 acres of the WSA, resulting in a more grazed appearance.

Impacts on Wildlife Habitat

The proposed riparian fencing along Mud Creek would be constructed to exclude livestock use and constructed range improvements would alleviate livestock pressure on riparian areas, allowing for the improvement of fish and wildlife habitat and recovery of streambanks along Mud Creek. The Bridge Creek riparian fence would be annually maintained, allowing a continued improvement in riparian habitat.

A slight increase in nongame populations could occur due to additional water availability from range improvement construction. Habitat for Canadian geese would be improved by additional livestock use of seedings. Livestock remove old grass growth and fall rains provide succulent growth sought by wintering geese.

Proposed increases in cattle use are not expected to increase cattle-big game forage competition in the WSA due to different forage preferences of big game versus cattle. Also, there is light deer and antelope use in this area during summer months, and elk use is uncommon. Most of the big game use that occurs is at higher elevations, above the area where the increased cattle use is projected. Lack of sagebrush cover precludes sage grouse using the area where the increases in grazing are projected. Golden eagles would not be affected by increased cattle use.

Conclusion: Riparian and fish habitat would improve along Mud Creek and Bridge Creek. Streambank erosion would be reduced. Nongame species populations would increase due to constructed water developments.

Impacts on Watershed

As in the all wilderness alternative, the proposal to exclude livestock from 4.6 miles of Mud Creek would allow the water quality and streambank stability to improve. The water developments proposed for the upland areas would provide an alternative for cattle that normally water at the stream, thus easing the livestock pressure on the stream.

Conclusion: Water quality and streambank stability would improve dramatically within the area to be excluded and slightly so on the remainder of the streams. There would be little change in the watershed over the rest of the area.

Impacts on Livestock Grazing

Livestock grazing use could increase by 520 AUMs within the affected pastures. The season of use and the distribution of increased AUMs by allotment is shown in Table 4.

Construction of the four reservoirs and 3 miles of pipeline would provide water for livestock in areas with underutilized forage. Making this underutilized forage available to livestock would allow an increase in grazing use of 520 AUMs.

Conclusion: An additional 520 AUMs of livestock grazing would be realized.

Impacts on Recreation Use

Vehicle-oriented recreation would continue. Projected use patterns indicate that the current level of 300 visitor days per year would increase over time, to 1,100 visitor days per year. Primitive recreation would continue to be disturbed by existing vehicle use with minor reductions from the developed range improvement projects.

Possible increases in fish and wildlife populations due to the developed wildlife and range projects would correspondingly increase overall recreation use slightly because of increased hunting and fishing use of the area.

Conclusion: Recreation use would increase from the current level of 300 visitor days per year to approximately 500 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would increase by 520 AUMs. Overall recreation use would increase by 200 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of $8,640 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by approximately $9,000.

Unavoidable Adverse Impacts of the Proposed Action

Under the Proposed Action (No Wilderness/No Action), increased vehicle use and construction of range and wildlife improvements (including 4 reservoirs, 3 miles of pipeline and 3 miles of fence) would have an unavoidable, adverse impact to wilderness values by directly disturbing 20 acres and visually influencing an additional 2,100 acres.

Relationship Between Short-term Uses and the Maintenance and Enhancement of Long-term Productivity

Under the Proposed Action, existing short-term uses would continue. Future development options, such as projected range improvements and wildlife projects, would remain open. Long-term ability of the area to produce wilderness values would be directly lost on 20 acres of the WSA due to surface disturbance related to range improvement projects, as well as further declines from other uses, such as increased grazing and use of motorized vehicles, over the long term. The 3 miles of fence constructed for riparian habitat enhancement would directly affect three acres. All projected actions would visually influence 2,100 acres.

Irreversible and Irretrievable Commitments of Resources

Under the Proposed Action, range improvement projects, involving construction of four reservoirs and 3 miles of pipeline, would result in an irreversible commitment of the wilderness resources on 20 acres directly. The projected 3+miles of fencing for riparian habitat enhancement would directly impair 3+acres. These projects and increased vehicle use would visually influence an additional 2,100 acres. Wilderness resources would be enhanced within the enclosures in the long term.

5. Manageability of the Area as Wilderness

The Bridge Creek WSA is manageable as wilderness under the all wilderness alternative. The dead-end road which enters the area from the west would present only a minor manageability problem if the area were designated as wilderness. Likewise, the split-estate land and private inholdings would not result in substantial manageability problems. These lands are outside the areas identified as moderately favorable for diatomite and there are no known plans to develop these parcels for other uses.

Boundary identification problems would not be expected along most of the eastern side of the WSA where the boundary is adjacent to private land because, with the exception of the drainages, most of this boundary is already identified by fencing. Signing placed in the canyons would adequately reduce potential management problems resulting from recreational use in this part of the WSA.

Rationale for the Selection of the Proposed Action

The no wilderness/no action alternative is the proposed action to allow for construction of range improvement projects and wildlife projects, and to provide more flexible management capabilities. The WSA does possess the minimum wilderness characteristics for qualification as a wilderness study area, but has few distinguishing features. The area is basically in a natural condition; however, unnatural developments influence approximately 12 percent of the WSA. The area possesses outstanding opportunities for solitude and provides for several types of primitive recreation activities. These wilderness characteristics are primarily associated with the major drainages of Bridge and Mud Creeks. The study area's wildlife habitat and cultural resource values are special wilderness features, but there are no exceptional values identified within the area which warrant protection through wilderness designation.

6. Summary and Analysis of Public Comments

Following is a summary of public comments specific to the WSA concerning adequacy of the analysis in this appendix and responses to those comments. These comments were received both in writing and oral testimony at public hearings during the comment periods for the 1985 Draft EIS and the 1987 Supplement to the Draft EIS. Comments concerning the BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning statewide issues and analysis are addressed in the Statewide volume.

Comment: Diatomite deposits are inexpansive and found extensively elsewhere in the area. **Response:** Based on quantitatively minimal but direct evidence, diatomite has a moderate potential for occurrence in small portions of the WSA. However, there are no known deposits of sufficiently large ore bodies that would merit development. It is postulated that little, if any, exploration for diatomite would occur in the WSA.

Comment: Need to consider an alternative that acquires inholdings to improve manageability and combines several WSAs into a Steens Mountain Complex. **Response:** An enhanced wilderness alternative which would combine Bridge Creek with the Blitzen River WSA, including acquisition of the private inholdings and mineral estate of the split-estate land and closure of the dead-end road, is not analyzed. Combining the two study areas would require closing the Steens Mountain Loop Road. This section of the Loop Road provides access for recreationists, private landowners, livestock users and BLM personnel; therefore, closure of the road is not considered feasible. Closing the dead-end roads and acquiring the mineral estate and private inholding would neither significantly improve the area's manageability nor would it be substantially different from the All Wilderness Alternative. See Section 2 for the description of the alternatives considered, but not analyzed in detail.

Table 1. Summary of Proposed Management Under Each Alternative, Bridge Creek WSA (OR-2-87)

Proposed Management	All Wilderness	No Wilderness/ No Action
Acres Designated as Wilderness	14,545	0
Acres Closed to ORVs by Wilderness Designation	14,545	0
Miles of Ways Closed[1]	4	0
Acres Withdrawn from Mineral Location and Leasing by Wilderness Designation	14,060	0
Structural Wildlife Projects Developed: Fences (miles)	3	3
Structural Livestock Projects Developed		
Reservoirs & Waterholes (number)	0	4
Pipelines (miles)	0	3
Increased Forage Allocation from Projects (AUMs)	0	520

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[1] Although 7 miles of ways exist in the WSA, 3 miles are already closed to vehicle access in accordance with the Steens Mountain Recreation Area Management Plan.

Table 2. Summary of Environmental Consequences of Alternatives, Bridge Creek WSA (OR-2-87)

Resource or Activity	All Wilderness	No Wilderness/No Action (Proposed Action)
Wilderness Values	Wilderness designation of the entire 14,545 acres in the Bridge Creek WSA would result in the protection of existing wilderness values and probable enhancement of those values.	Projected resource activities and developments would directly impair wilderness values over approximately 20 acres of surface disturbance and 2,100 acres of indirect influence with further declines from other potential uses over the long term.
Energy and Mineral Development	No impact to energy or mineral development is projected.	No impact to energy or mineral development is projected.
Vegetation	The 4 miles of ways (totaling 4 acres) would naturally revegetate. Overall vegetation would remain unchanged. Riparian vegetation along 4.6 miles of Mud Creek would substantially improve.	Range improvements would result in a direct loss of vegetation on 20 acres. Riparian vegetation within the exclosure would substantially improve. There would be a 520 AUM increase in utilization, with a corresponding decrease in residual ground cover, over approximately 1,200 acres of the WSA, resulting in a more grazed appearance.
Wildlife	Wildlife habitat and populations would be maintained and continue to improve on 14,545 acres designated wilderness. Riparian and fish habitat would be improved along 4.6 miles of Mud Creek by excluding livestock. Maintenance of the riparian fences along Bridge Creek would become more difficult, allowing possible cattle intrusion into an estimated 2 miles of riparian habitat.	Riparian and fish habitat would improve along Mud Creek and Bridge Creek. Streambank erosion would be reduced. Nongame species populations would increase due to constructed water developments.
Watershed	Water quality and streambank stability would improve in the Mud Creek exclosure. Other exclosures may deteriorate, causing decline in water quality.	Water quality and streambank stability would improve on Mud Creek. Little change expected over the rest of the area.
Livestock Grazing	Livestock use would remain at 1,246 AUMs. Vehicle use on 4 miles of ways would be severely limited.	An additional 520 AUMs of livestock grazing would be realized.
Recreation Use	Recreation use would increase from the current level of 300 visitor days per year to approximately 500 visitor days per year.	Recreation use would increase from the current level of 300 visitor days per year to approximately 500 visitor days per year.
Local Personal Income	Annual local personal income would increase by approximately $2,000.	Annual local personal income would increase by approximately $9,000.

Table 3. Classification of Energy and Mineral Potential, Bridge Creek WSA (OR-2-87)

Commodity	Area	Level of Potential	Level of Certainty
Metals	Entire WSA	O	B
Geothermal	Entire WSA	L	B
Uranium/Thorium	Entire WSA	O	A
Coal	Entire WSA	O	B
Oil/Gas	Entire WSA	L	A
Tar Sands/Oil Shale	Entire WSA	O	C
Limestone	Entire WSA	O	C
Bentonite	Entire WSA	O	A
Diatomite	See Map 3	M	C
	Rest of WSA	O	B
	Entire WSA	O	A
Zeolites	Entire WSA	O	A

Level of Potential

O - No indications for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Moderate potential for accumulations of energy/mineral resource
H - High potential for accumulations of energy/mineral resource

Level of Certainty

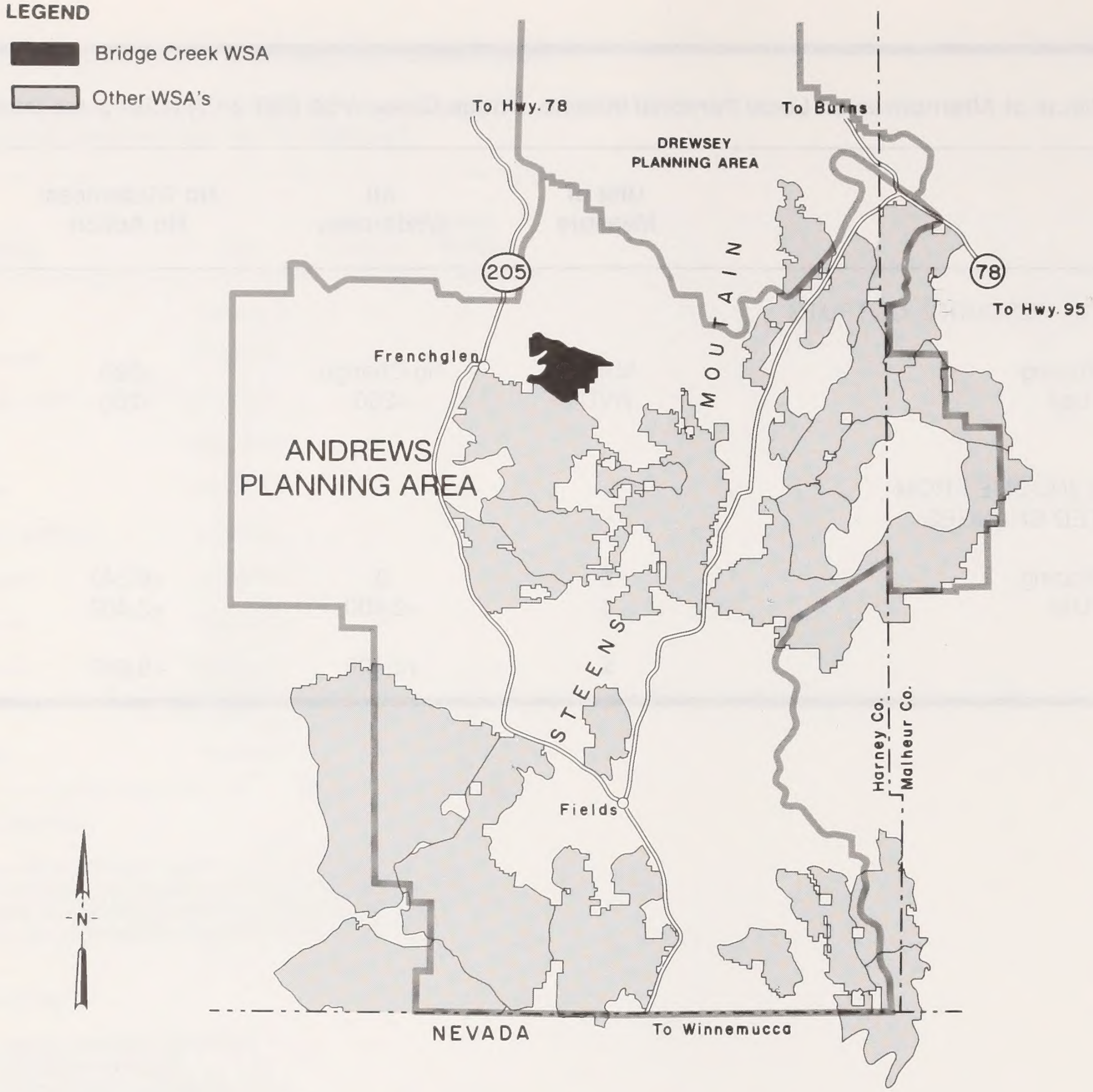
A - Insufficient data or no direct evidence
B - Indirect evidence available
C - Direct evidence but quantitatively minimal
D - Abundant direct and indirect evidence

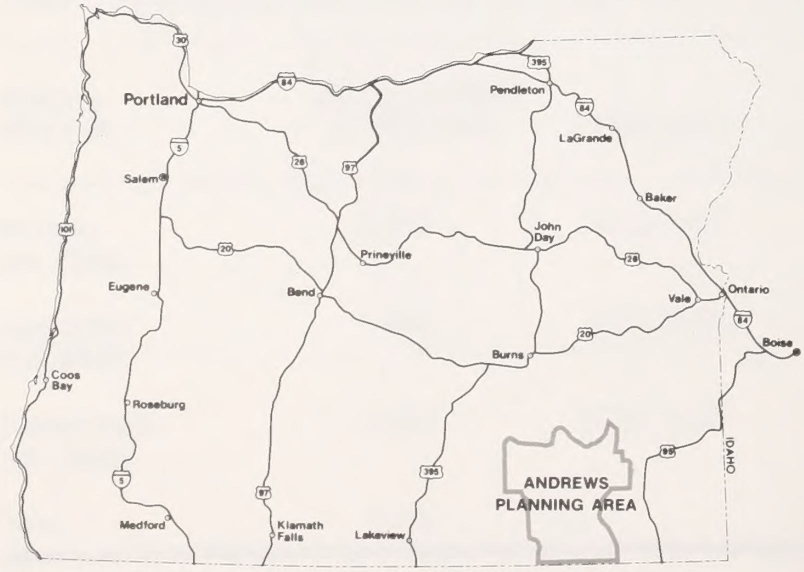
Table 4. Existing Livestock Use of Bridge Creek WSA (OR-2-87)

Grazing Allotment	Licensed AUMs in Allotment	Period of Use	Percent of Allot. in WSA	Current Estimated Use in WSA (AUMs)
Krumbo (No. 6008)	5,003	04/16-10/31	10	603
Mud Creek (No. 6005)	584	05/15-06/30	81	368
Frazier Field (No. 6006)	2,356	04/01-10/31	9	275
Total	7,943			1,246

Table 5. Effects of Alternatives on Local Personal Income, Bridge Creek WSA (OR-2-87) (1981 price levels)

Item	Unit of Measure	All Wilderness	No Wilderness/ No Action
CHANGES IN RESOURCE OUTPUTS			
Livestock Grazing	AUMs	No Change	+520
Recreation Use	RVD	+200	+200
PERSONAL INCOME FROM PROJECTED CHANGES			
Livestock Grazing	$	0	+6,240
Recreation Use	$	+2,400	+2,400
Total	$	+2,400	+8,640





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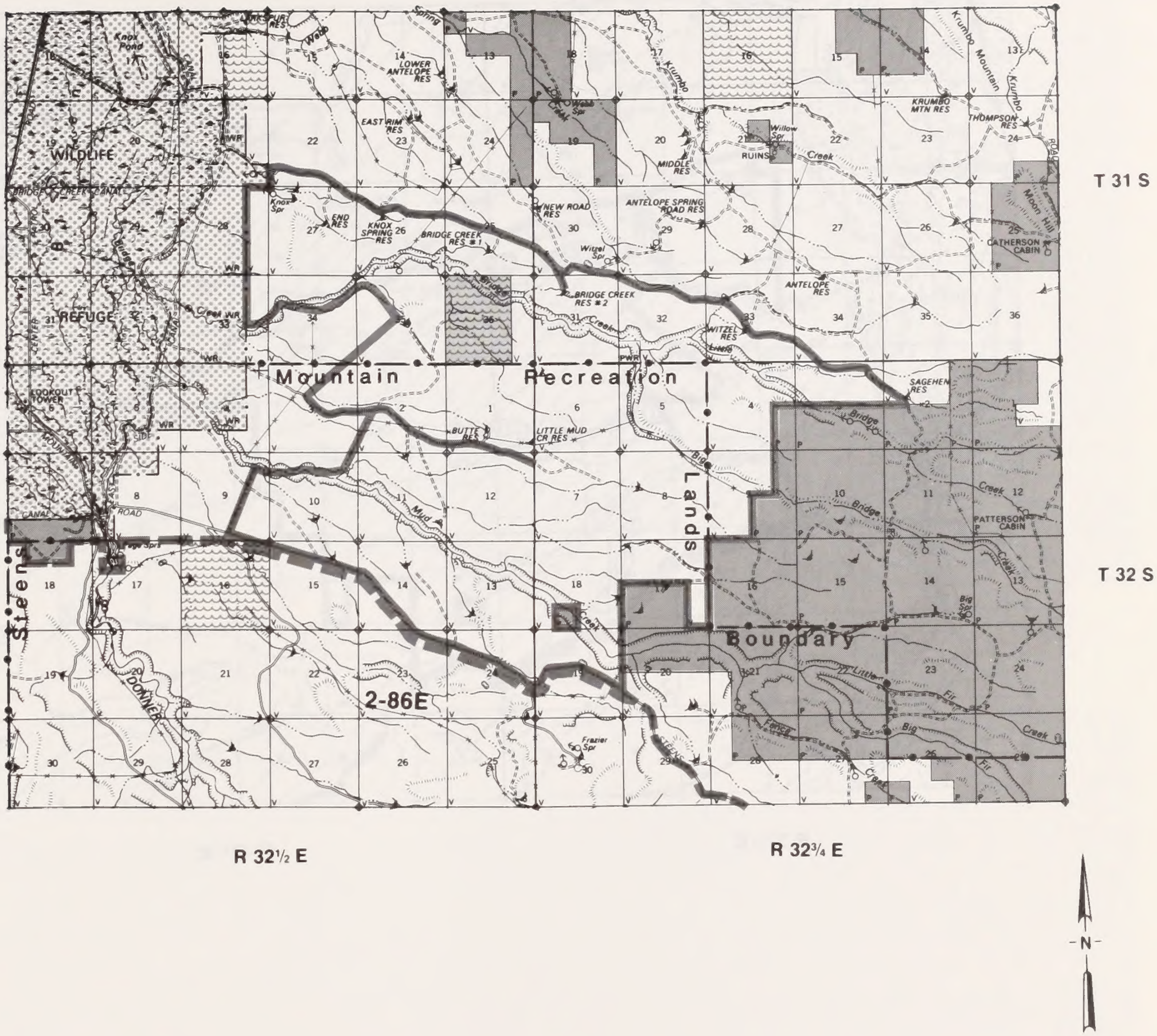
Burns District

Bridge Creek WSA
OR-2-87

LOCATION MAP

MAP 1



LEGEND

▒ BLM Land Studied Under Section 202 of FLPMA (Other BLM Land in WSA Studied Under Section 603 of FLPMA)

━ Wilderness Study Area Boundary

╍ Boundary of Adjacent Wilderness Study Areas

☐ Bureau of Land Management

■ Private

░ National Wildlife Refuge

▤ BLM Surface-State or Private Subsurface (Split Estate)

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Bridge Creek WSA
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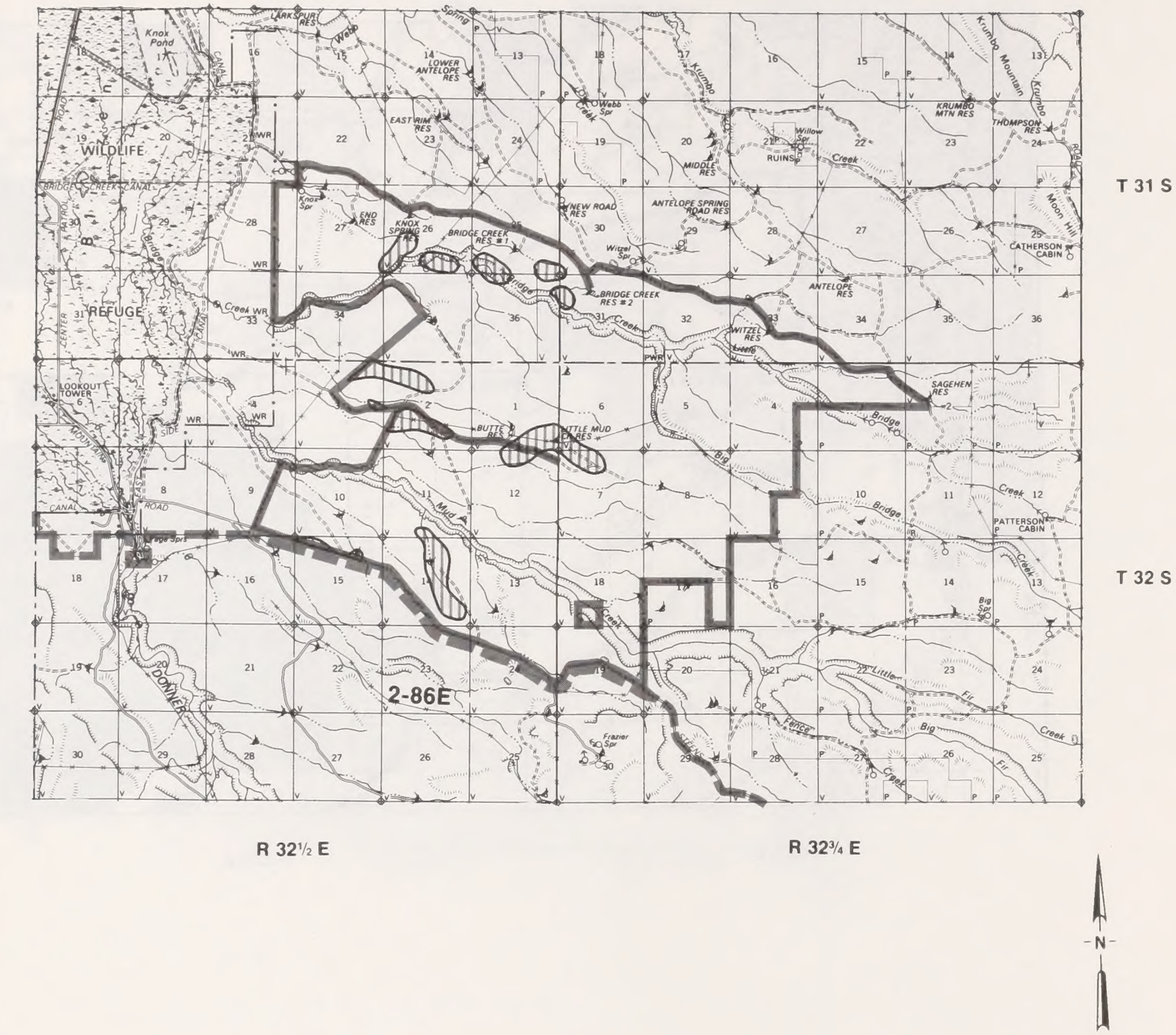
LAND OWNERSHIP

1 0 1 2 MILES

MAP 2



▥ **Moderate Potential (MC) for Diatomite**

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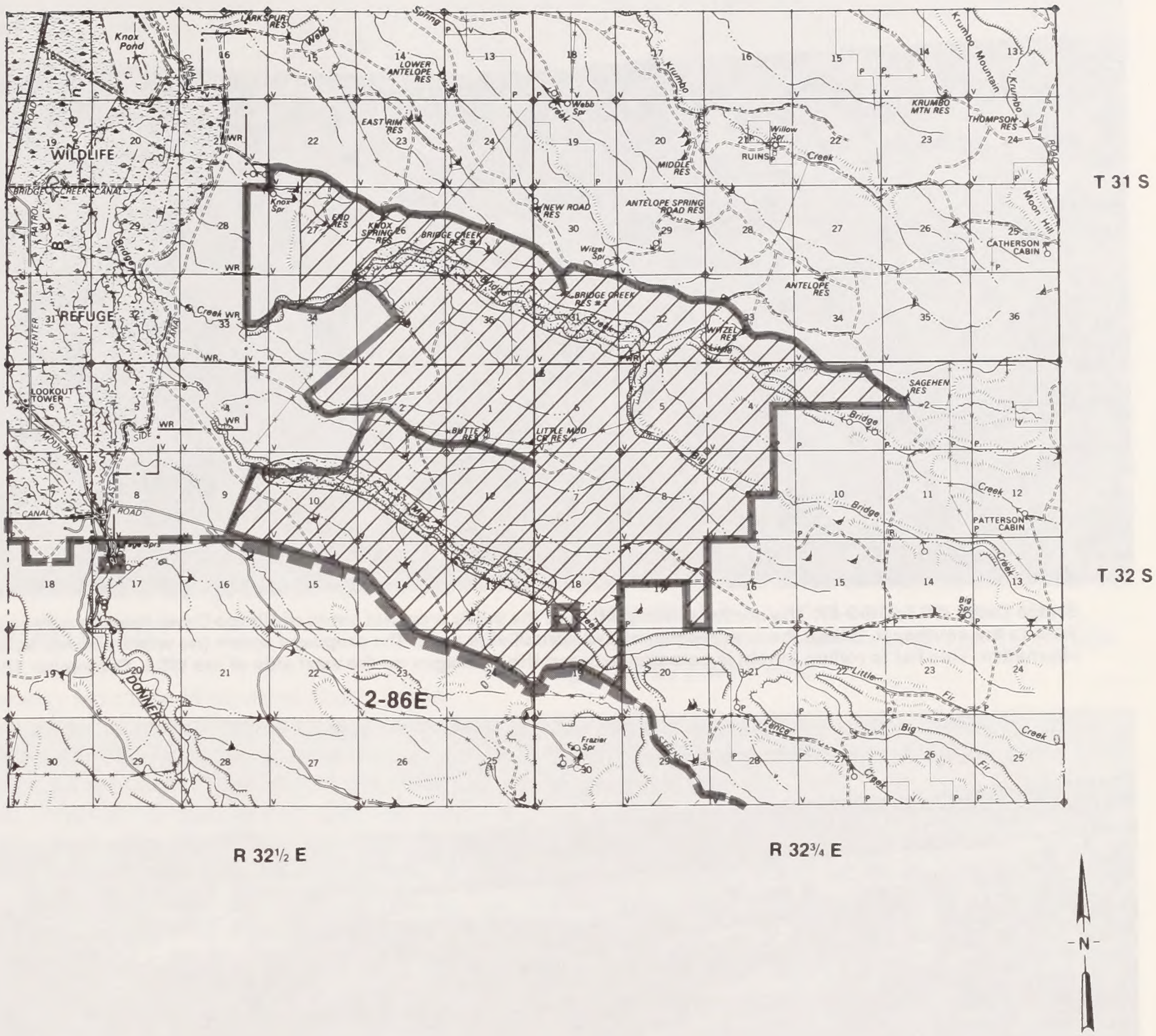
MODERATE OR HIGH POTENTIAL MINERAL OR ENERGY RESOURCES

1 0 1 2 MILES

MAP 3



🟰 Wilderness Study Area Boundary

▬ ▬ Boundary of Adjacent Wilderness Study Areas

▨ Deer Winter Range

░ Raptor Nesting Habitat

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SPECIAL FEATURES

1 0 1 2 MILES

MAP 4

Bridge Creek WSA, OR-2-87. The northwestern portion of the study area just south of Birdge Creek looking across the WSA to the southeast. Within the area recommended nonsuitable under the proposed action (no wilderness/no action) alternative. This flat to rolling terrain is common between the drainages on the west side of the WSA. September 1983.

Birdge Creek WSA, OR-2-87. The north side of Mud Creek looking west. The ridgeline in the background is located outside the WSA to the south and west. This area is nonsuitable under the proposed action (no wilderness/no action) alternative. Steep, rocky, juniper covered slopes dominate the drainages while scattered juniper, grass and sagebrush are common on the flatter terrain adjacent to the canyons (visible here on the far side of the drainage). September 1983.

Appendix to the Wilderness Environmental Impact Statement for Oregon

Strawberry Mountain Wilderness Study Areas

Pine Creek (OR-2-98A)
Sheep Gulch (OR-2-98C)
Indian Creek (OR-2-98D)

1. Introduction

General Description of the Study Areas

The Strawberry Mountain Wilderness Study Areas (WSAs) are three small study areas located adjacent to the U.S. Forest Service Strawberry Mountain Wilderness in Grant County (see Map 1). All of the study areas lie within 10 miles of each other around the perimeter of the Strawberry Mountain Range and on the northern and western boundaries of the Strawberry Mountain Wilderness. In addition to the wilderness area, private land, a mine and roads also serve as boundaries for the study areas (see Map 2). The Pine Creek study area (OR-2-98A) is located on the north side of the wilderness in the John Day Valley about 5.5 miles southeast of Canyon City and John Day. The Sheep Gulch study area (OR-2-98C) is on the western side of the wilderness in the Canyon Creek drainage, 2.5 miles south of Canyon City. The Indian Creek study area (OR-2-98D) lies to the east of the Pine Creek area and is also on the north side of the wilderness approximately 6 miles south of Prairie City. The nearest major highways are U.S. Highway 26, 3 miles to the north of Pine Creek and 6 miles north of Indian Creek, and U.S. Highway 395 within 0.5 mile of the Sheep Gulch area on the west. As a result of their location around the perimeter of the Strawberry Mountains, the study areas have similar features. Each of the study areas is characterized by steep slopes, a perennial stream, intermittent drainages and vegetation ranging from unvegetated, rocky slopes to forested areas.

Pine Creek WSA

The Pine Creek WSA contains 200 acres of public land. The area is 0.75 mile in length and just over 0.5 mile in width. It is bounded on the south by the Strawberry Mountain Wilderness and on the remaining sides by private land.

The WSA is situated on a steep north-facing slope which varies in elevation from 4,440 feet on the southeast in the Pine Creek drainage to 5,760 feet on the southwest side at the top of a ridge. Ridgelines, small drainages and steep slopes make up the general topography of the area. About 0.25 mile of Pine Creek cuts through the southeastern corner of the WSA.

Sheep Gulch WSA

The Sheep Gulch WSA contains 741 acres of public land and is the largest of the three study areas. The parcel is bounded on the east by the Strawberry Mountain Wilderness and on the north, west and south by private land. The area is two miles long and 0.5 mile wide.

The study area lies on a steep west-facing slope of Little Canyon Mountain (on the west end of the Strawberry Mountains). A perennial stream, Sheep Gulch, runs east to west through the center of the area. Steep ridgelines and intermittent drainages are also characteristic of this WSA. The elevation of the area varies from 3,680 feet on the western boundary near Canyon Creek to 5,560 feet on the eastern boundary near the Strawberry Mountain Wilderness.

Indian Creek WSA

The Indian Creek WSA contains 208 acres of public land. It is bounded on the south by the Strawberry Mountain Wilderness and by a non-wilderness portion of the Malheur National Forest. On the north a mine and private land form the boundary, while on the east and west the area is bounded by roads. The area is nearly 1 mile long and 0.5 mile wide.

The parcel is in an area of foothills and benches on the north side of the Strawberry Mountain Range. Indian Creek, a perennial stream, runs south to north through the center of the area for about 0.5 mile. The elevation in the study area varies from 4,280 feet on the north in the bottom of the Indian Creek drainage to 4,840 in the southwest corner.

Interrelationships

The primary interrelationship of these parcels is the common administrative boundary they share with the 68,700-acre Strawberry Mountain Wilderness which is managed by the Malheur National Forest. The three parcels are being considered for wilderness only in association with the adjacent designated wilderness. The parcels and the existing wilderness fall within the same roadless area.

The WSA group is in the Oregon Department of Fish and Wildlife (ODFW) Murderer's Creek Wildlife Unit. The group of WSAs contains winter range for approximately 100 mule deer, 20 elk and 10 California bighorn sheep, the latter being a category 2 Federal Candidate species. ODFW management goals for big game are being met. The goal for nongame wildlife is to maintain populations of naturally-occurring species at self-sustaining levels. The proposed action for this group conforms with ODFW's management goals for game and nongame wildlife.

Grant County has not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study and EIS planning, scoping and public review processes. These issues concern both the effects of wilderness designation on existing and potential land uses or resources in the WSA, as well as the effects of existing and potential land uses or resources on wilderness values. Land uses or resources raised as issues specifically for this WSA include:

- impact on the areas wilderness values,
- impact on levels of timber harvest,
- impact on mineral development,
- impact on steelhead spawning areas and other wildlife features, and
- impact on recreation use levels

2. Description of the Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonable foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State, and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predications are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made.

The following alternatives are analyzed:

- all wilderness
- no wilderness/no action (proposed action)

Partial alternatives for the three WSAs are not analyzed because there are no opportunities to resolve resource conflicts by reducing the size of the study areas.

All Wilderness

Under this alternative, all 1,149 acres of public land in the Strawberry Mountain WSAs would be recommended suitable for wilderness (see Map 2). This would include 200 acres in Pine Creek, 741 acres in the Sheep Gulch and 208 in the Indian Creek WSA. All boundaries of each of the three WSAs would be formed by private and U.S. Forest Service lands except for the west boundary of the Indian Creek WSA which would be formed by a bladed road. Each of the areas would be incorporated into the large, existing Strawberry Mountain Wilderness. A total of 1.35 miles of vehicle ways would be closed.

Energy and Mineral Development Actions

Wilderness designation would close 1,149 acres in the WSAs to energy and mineral entry. Surface-disturbing exploration and development would be prohibited on 741 acres which have a high potential for the occurrence of copper and silver, 408 acres which have a high potential for the occurrence of chromium, 1,149 acres which have a moderate potential for the occurrence of gold and 408 acres which have a moderate potential for the occurrence of copper, silver and geothermal resources.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW goals and consistent with guidelines established in BLM's Wilderness Management Policy. No wildlife projects are planned in this WSA.

Livestock Management Actions

Authorized livestock use would remain at the current level of five AUMs within the Indian Creek WSA and no use in the Pine Creek and Sheep Gulch WSAs. Vehicle use for livestock management would be precluded on 0.5 mile of way in Indian Creek WSA as well as on 0.85 mile of ways in the other WSAs where livestock use is not now occurring. Use of heavy equipment would be allowed to maintain a water diversion in Pine Creek. This would occur every three to five years and would be subject to permit.

Wood Products Management Actions

The average annual harvest level of seven thousand board feet (7 Mbf) from 98 acres of currently available commercial forestland in the Sheep Gulch WSA would be precluded.

Recreation Management Actions

The entire 1,149 acres in the Strawberry Mountain WSA complex would be closed to vehicle use. A total of 1.35 mile of way would be closed. At present, vehicle use in the WSAs is limited to these ways by an existing "limited" ORV designation. Current recreation use which totals approximately 200 visitor days per year is mainly for hunting and casual use associated with the adjacent Strawberry Mountain Wilderness.

No Wilderness/No Action (Proposed Action)

The no wilderness/no action alternative would recommend all of the 1,149 acres in the three WSAs nonsuitable as wilderness. It represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

All of the 1,149 acres in the WSAs would be open to energy and mineral entry.

The Indian Creek and Pine Creek WSAs contain 408 acres with a high potential for the occurrence of chromium. It is projected that exploration in the Indian Creek WSA will discover an extension of the Marks-Thompson mine. A small mine including 0.25 mile of access road is projected to be developed in the WSA. Total surface disturbance would be five acres.

The Sheep Gulch WSA contains 741 acres with a high potential for the occurrence of copper and silver. It is projected that exploration in this WSA will discover a small deposit and a small mine and 0.5 mile of access road is projected to be developed. Five acres would be disturbed.

All of the WSAs are rated as having moderate potential for the occurrence of gold and Pine Creek and Indian Creek WSAs are rated as having moderate potential for the occurrence of copper, silver and geothermal resources. Due to the speculative nature of these occurrences, development is not expected.

Wildlife Habitat Management Actions

Habitat would be managed to support the maximum wildlife species possible in accordance with ODFW management goals. No wildlife projects are planned.

Livestock Management Actions

Authorized livestock use would remain at the current use level of five AUMs in the Indian Creek WSA. No use would continue to be authorized in the Pine Creek and Sheep Gulch WSAs. Minor vehicle use for livestock management would be allowed on the 0.5 mile of way in Indian Creek WSA as well as on 0.85 mile of ways in the other WSAs now used by livestock. The water diversion would continue to be maintained by heavy equipment as needed.

Wood Products Management Actions

The average annual harvest level of 7 Mbf from 98 acres of currently available commercial forestland in the Sheep Gulch WSA would be allowed.

Recreation Management Actions

Vehicle use would continue on the 1.35 miles of ways, mainly for hunting and access to the Strawberry Mountain Wilderness. Current recreation use levels are estimated at 200 visitor days per year.

Summary

Table 1 summarizes the projected management actions under each alternative.
Table 2 summarizes the environmental consequences of each alternative.

3. Affected Environment

The section discusses only those major environmental conditions that describe the character of the study area, or that may be affected by the alternatives.

Wilderness Values

Naturalness

Each of the WSAs appears to be in a natural condition with few constructed features present or visible within the areas.

The Pine Creek parcel contains several unnatural features. Included within the WSA is one fence (0.75-mile long), one small water diversion, four areas of past mining activity and four vehicle ways totaling 0.75 mile. The fence runs along a ridgeline through the center of the area and is not a noticeable feature except within the immediate vicinity. The water diversion is located on the eastern corner of the area where Pine Creek leaves the WSA. The diversion used for irrigation is a small development and is generally screened by vegetation. It is not noticeable except along the drainage. The areas of mining activity are small and are located on a steep ridge in the south-central part of the WSA. Because of the steepness of the terrain, the excavations are difficult to see from within the WSA. The total area of influence of these developments in the WSA is less than 20 acres (ten percent of the WSA).

Sheep Gulch is nearly unaffected by human activities. One way enters the WSA from the north for about 0.1 mile. The way is located in a small drainage and is well screened by vegetation and topography. The area of influence of this way is one acre.

The Indian Creek parcel has an old timber sale in the west end of the area. It is not noticeable and its area of influence on the naturalness of the WSA is less than 15 acres (two percent of the WSA). An old way also cuts through this area for about 0.5 mile. It is partially overgrown and not noticeable, influencing two acres.

The outside sights and sounds which influence these areas are minimal. The influence of features outside the three WSAs is limited to distant views of nearby communities and infrequent views of nearby roads (all WSAs), adjacent mining operations (Indian Creek), and portions of a small ranching operation (Pine Creek). Sheep Gulch has a U.S. Highway 395 on the west side and would probably be influenced more by outside sights and sounds than the other two areas. The roads and ranching operation in the vicinity of the Indian Creek and Pine Creek parcels are generally screened by topography or vegetation and would not have an effect on a visitor's perception of the area's natural character.

The Marks-Thompson mine is located near the northwest corner of the Indian Creek WSA and has been excluded from the study area. Because of vegetative screening and its location relative to the remainder of the area, the disturbance from the mining is not seen from most of the WSA.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

Although the areas possess outstanding opportunities for solitude and primitive recreation in association with the adjoining wilderness, these opportunities are very limited when the areas are considered by themselves. The small size of each of the parcels would severely restrict visitors' movement and would substantially increase the chance of visitors or parties encountering each other. However, opportunities for solitude are available within each of the areas due to the ruggedness of the mountain terrain. This topographic diversity would provide sufficient screening for a visitor to find areas of solitude.

In addition, the WSAs also contain areas of vegetative screening which enhance opportunities for solitude. Screening is provided by Douglas fir, ponderosa pine, juniper, mountain mahogany, hardwood trees (in the riparian zones) and various shrub species. This vegetative cover would greatly help to reduce the influence of other visitors within each of the small parcels.

The opportunities for primitive types of recreation were not found to be outstanding in these small study areas. Of the recreational activities available within the study areas, the best opportunities are for day hiking. Although each of the areas is small, the ruggedness of the topography, the vegetation cover and the adjacent scenery would provide the visitor with interesting and challenging short hikes.

Opportunities for sightseeing, photography and viewing wildlife are also available in the study areas. Views of the surrounding country, including the Strawberry Mountains, the Canyon Creek drainage and the John Day River Valley provide good opportunities for sightseeing and photography from the study areas. Although the study areas themselves are attractive, there are no known exceptionally scenic attractions within the small parcels. Opportunities for viewing or photographing wildlife are somewhat greater in the Sheep Gulch area because of the year-round bighorn sheep range and the seasonal presence of deer and elk.

Opportunities for backpacking, camping and horseback riding are limited because of the small size of the study areas. None of the individual areas are of sufficient size to support an extended hike or backpacking trip. The primary use of the areas for these activities would be as a trailhead for trips into adjacent areas.

Some opportunities may exist for hunting and fishing within the WSAs. Deer and elk may seek cover on the lower slopes of the Strawberry Mountains during severe fall weather. At these times the chances for hunting success within these small areas may be better than at higher elevations. Limited fishing opportunities are also available as each of the WSAs contains a perennial stream.

Special Features

The Sheep Gulch WSA contains 10 California bighorn sheep, a Category 2 Federal Candidate species. Both Pine Creek and Indian Creek contain spawning habitat for steelhead trout (see Map 2).

Diversity in the National Wilderness Preservation System (NWPS)

According to the Bailey-Kuchler system of classifying ecosystems, the WSAs are in the Rocky Mountain Forest Province and their potential natural vegetation is western ponderosa forest and grand fir-Douglas fir forest.

Eight of the vegetative communities listed in the Ochoco, Blue and Wallowa Mountains section of the Oregon Natural Heritage Plan occur in these WSAs. All three WSAs include the Douglas fir-ponderosa pine/elk sedge within the mixed conifer forest and a low elevation riparian forest with cottonwoods, hawthorne and alder.

The Pine Creek WSA additionally includes ponderosa pine/bluebunch wheatgrass communities with separate areas of Idaho fescue and bluebunch wheatgrass.

In the Sheep Gulch area, the vegetative communities also include Douglas fir-ponderosa pine/pinegrass, mountain mahogany/bunchgrass communities, and western juniper/low sagebrush/bunchgrass communities at lower to mid-elevations of the WSA.

In the Indian Creek WSA the communities include ponderosa pine/bitterbrush/bunchgrass, mountain mahogany/bunchgrass communities and moist native bluegrass meadows.

The study area is within five hours' driving time of six standard metropolitan statistical areas with populations over 100,000: Boise, Idaho; Portland, Salem and Eugene/Springfield, Oregon; and Richland/Kennewick/Pasco and Yakima, Washington.

Energy and Mineral Development

The geology, energy and mineral resources of the Strawberry Mountain WSA were evaluated by interpreting existing literature, reviewing mining claim and mineral leasing records and correlating rock units in the WSA with similar environments in areas known to contain mineral resources.

The lands within the WSAs have been classified according to a rating system that indicates both the potential for occurrence (level of potential) of certain minerals, as well as the quantity and quality of data on which the rating is based (level of confidence). Table 3 shows the classifications of energy and mineral potentials in the WSA. A description of the rating system is provided in the Statewide EIS volume.

Rocks exposed at the surface in Pine Creek and Indian Creek WSAs include Paleozoic shales and slates which have been intruded by younger Permian/Triassic igneous rocks, such as gabbro, olivinite, dunite and periodotite. Still younger Cretaceous dioritic igneous rocks may have intruded under all of these areas, but these rocks are not exposed within the WSA.

Energy Resources

Pine Creek and Indian Creek WSAs have moderate favorability for the occurrence of low to moderate temperature geothermal resources suitable for direct use applications. These resources may be localized along fault zones on the north side of Strawberry Mountain. (Limekiln Hot Springs is located about 0.25 mile north of Indian Creek WSA.) As of October 16, 1987, there were no geothermal or oil and gas leases in the WSAs.

Mineral Resources

Pine Creek and Indian Creek WSAs have known deposits of chromite and high favorability for the occurrence of chromite elsewhere in the units. Several seams of chromite are exposed in the eastern portion of Pine Creek WSA in surface outcrops and prospect adits (underground workings). The Marks-Thompson mine, located near Indian Creek WSA, produced 400 tons of chromite in 1916 and 1917. Each of these WSAs has high potential for chromite. The chromite resources are associated with serpentinite, dunite and olivinite rock types. These WSAs have moderate favorability for the occurrence of chrysotile asbestos due to the presence of serpentine. They also have moderate favorability for vein-type gold deposits and for copper-silver mineralization in shear zones similar to other deposits which occur nearby on Strawberry Mountain and Little Canyon Mountain.

Sheep Gulch WSA has been rated as having high favorability for deposits of copper and silver in quartz-bearing shear zones and moderate favorability for vein-type gold deposits. This is based on known deposits of copper within the area boundaries, as well as good indications of silver from a sample site nearby. Gold favorability is more speculative and is based on the nearby occurrence of numerous gold veins located about 1 to 2 miles to the north on Little Canyon Mountain.

Chromium, chrysotile asbestos, and copper are considered to be strategic and critical minerals. Known deposits of strategic and critical minerals occur in each unit of the WSA.

As of October 16, 1987, there was one mining claim in Pine Creek WSA, ten mining claims in Indian Creek WSA and four mining claims in Sheep Gulch WSA. All of these claims are post-FLPMA claims.

Vegetation

The predominant vegetation in the Pine Creek WSA is ponderosa pine and Douglas fir, with an understory of grasses. The open, rocky areas support a variety of plants including bluebunch wheatgrass, Sandberg's bluegrass, bitterbrush and sagebrush. Riparian areas provide habitat for a variety of riparian species including cottonwoods, willows, alder, sedges, bluegrasses and various shrub species. The majority of the vegetation is in mid-seral stage.

In the Sheep Gulch and Indian Creek WSAs, the predominant vegetation is mountain mahogany with an understory of grasses. Some forested areas found in the western portion of the Indian Creek WSA and scattered in the Sheep Gulch WSA include ponderosa pine, Douglas fir, pinegrass, elk sedge, Idaho fescue, bluebunch wheatgrass, antelope bitterbrush and big bluegrass. Riparian species along Indian Creek and the stream in the center of Sheep Gulch WSA provide habitat for a variety of riparian species including cottonwoods, willows alder, sedges, bluegrasses and various shrub species. Within the Indian Creek WSA are some small wet meadows, primarily dominated by bluegrasses. The majority of the vegetation is in a late seral stage with the remainder in the mid-seral stage.

There are no known threatened or endangered plant species within the WSAs.

Wildlife

Approximately 100 mule deer, 20 elk and 10 California bighorn sheep use this WSA group as winter range while lesser numbers use it as summer range. Wildlife habitat presently is in good condition due to few competing uses. Rainbow trout reside in and steelhead spawn in Pine Creek and Indian Creek. In addition, a wide variety of nongame wildlife occurs in this WSA group.

Watershed

The WSA complex contains 1.5 miles of perennial stream: Indian Creek (0.5 mile), Pine Creek (0.25 mile) and Sheep Gulch (0.75 mile). Water quality is generally good. None of the alternatives would affect watershed condition in the WSAs and therefore watershed will not be discussed further.

Livestock Grazing

Only the Indian Creek WSA is included within a grazing allotment. There is 25 percent of the Indian Creek Allotment (No. 4099) within this WSA. Although five AUMs are authorized, use in the WSA does not actually occur due to the steep topography and more available forage elsewhere in the allotment. The period of use is April 1 to November 30. The 0.5 mile of way in this WSA is used five to ten times per year to provide access to areas outside the WSA for general livestock supervision and management.

Existing livestock developments include 0.75 mile of fence and one water diversion on Pine Creek used for downstream irrigation of private land. Heavy equipment is used once every three to five years to maintain the water diversion.

Wood Products Harvest

The Strawberry Mountain WSAs contain 491 acres of commercial forest land including 118 acres in the Pine Creek area, 323 acres in Sheep Gulch and 50 acres in the Indian Creek WSA. Of this total, 393 acres are not suitable for harvest because the sites are too rocky, too steep or otherwise not harvestable. This includes all of the acreage in both the Pine Creek and Indian Creek WSAs and a portion of the acreage in the Sheep Gulch area. The remaining 98 acres, all in the Sheep Gulch WSA, do contain harvestable timber and are included in the timber base for the Prineville District. An average annual harvest level of seven thousand board feet (7 Mbf) is available in the Sheep Gulch WSA.

Recreation Use

Recreation use in the three Strawberry Mountain WSAs totals approximately 200 visitor days per year and does not appear to be increasing or decreasing. This use is primarily oriented toward hunting and fishing. Mule deer, elk and upland game birds are the most commonly hunted game species. Some trout fishing may occur in the Pine Creek and Indian Creek WSAs. Access for most of these activities is by motorized vehicle.

Local Personal Income

Livestock use at the current level of five AUMs, timber harvest of an average annual volume of seven Mbf and recreation use totaling 200 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to less than $100 for livestock grazing, $1,900 for timber production and $2,400 related to recreation use of the WSA, for an overall total of approximately $4,400. The Statewide EIS volume discusses the term local personal income and how income figures have been derived.

4. Environmental Consequences

This section discusses the environmental consequences of implementing each of the alternatives. Resources and activities not significantly affected by any of the alternatives are not discussed. The Statewide volume discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness:

Pine Creek WSA: 200 acres
Sheep Gulch WSA: 741 acres
Indian Creek WSA: 208 acres
Total for three WSAs: 1,149 acres

Recommended nonsuitable for wilderness:

Pine Creek WSA: 0 acres
Sheep Gulch WSA: 0 acres
Indian Creek WSA: 0 acres
Total for three WSAs: 0 acres

Impacts on Wilderness Values

Wilderness values within the entire 1,149 acres of the Strawberry Mountain complex would be protected by legislative mandate through wilderness designation. Wilderness values of naturalness, solitude and primitive, unconfined recreation would be preserved. Special features including the California bighorn sheep (a category 2 Federal candidate species in Sheep Gulch WSA) and steelhead trout in Pine Creek and Indian Creek WSAs would also be protected.

Naturalness

The natural-appearing areas within the WSA complex (about 88 percent of the WSAs are pristine, uninfluenced by any unnatural features), would be enhanced by prohibiting motorized vehicle use on the 1.35 mile of ways in the WSAs which would be allowed to revegetate. A small portion of a way in the Pine Creek WSA would be used by heavy equipment, subject to permit, every three to five years to maintain a water diversion. Disturbance to naturalness would be very limited since such infrequent use would allow this way to revegetate.

Solitude

Opportunities for solitude provided by the rugged terrain and vegetative screening would be further enhanced by eliminating motorized vehicles on the 1.35 mile of ways in the WSAs.

Primitive and Unconfined Recreation

Closure of 1.35 mile of ways in the WSAs would increase opportunities for primitive and unconfined recreation activities such as sightseeing, photography and viewing wildlife. The quality of these experiences would be improved by removing vehicles and rehabilitating vehicle ways, providing a more natural-appearing setting. These opportunities would remain limited however.

Special Features

Wilderness designation would protect the small sections of steelhead trout spawning areas in the Pine Creek and Indian Creek WSAs, as well as the year-long habitat for California bighorn sheep in the Sheep Gulch WSA.

Conclusion: Wilderness designation of the 1,149 acres within the WSA complex would protect and enhance existing wilderness values.

Impacts on Energy and Mineral Development

Wilderness designation would close 1,149 acres within the WSAs to energy and mineral entry.

Energy Development

Surface-disturbing exploration for geothermal resources in the Pine Creek and Indian Creek WSAs would be prohibited on 408 acres. However, due to the speculative nature of this resource in the WSAs, development is not expected.

Conclusion: No impacts to geothermal resource production are expected.

Mineral Development

Surface-disturbing exploration and development for chromium and copper-silver would be precluded on 1,149 acres. The projected development of two small mines for these minerals would be precluded. Surface disturbing exploration for gold would be precluded on 408 acres. Due to the speculative nature of gold occurrences, development is not expected.

Conclusion: Production of chromium and copper-silver from two projected small mines would be foregone. No impact to gold production is expected.

Impacts on Vegetation

There would be no significant impacts on the vegetation. Once closed to vehicles, the 1.35 mile of ways totaling one acre would begin to revegetate within two growing seasons.

Conclusion: Revegetation would occur on 1.35 mile of ways.

Impacts on Wildlife

Wildlife populations including the California bighorn sheep would be maintained at existing levels. Closure of 1.35 mile of ways would result in less disturbance to wildlife by motor vehicles. ODFW goals would be met.

Conclusion: Populations would be maintained on 1,149 acres designated as wilderness. There would be less disturbance from motorized vehicles.

Impacts on Livestock Grazing

Livestock use would remain at the current level of five AUMs within the Indian Creek WSA. Vehicle use for livestock management on 0.5 mile of way would be precluded in the Indian Creek WSA resulting in some minor inconvenience and cost to the livestock operator. Livestock management is presently accomplished primarily by horseback.

Conclusion: Authorized livestock forage allocations would remain at five AUMs. Vehicle use of 0.5 mile of way which provides access to the other areas in addition to the WSA would be precluded with minor inconvenience and slight increase in cost to the livestock operators.

Impacts on Wood Products Harvest

An average annual harvest level of 7 Mbf on 98 acres of currently available commercial forestland in the Sheep Gulch WSA would be precluded. This volume is less than one-tenth of one percent of the average annual harvest volume in the Prineville District.

Conclusion: An average annual harvest of 7 Mbf would be foregone.

Impacts on Recreation Use

Under the all wilderness alternative, the quality and opportunities for non-motorized recreation would be slightly increased. The overall quality of non-motorized types of recreation would be increased since these study areas would be included in the Strawberry Mountain Wilderness and the 1.35 mile of ways would be closed to motor vehicles.

Hunting would not be significantly affected by the closing of vehicle ways. It is not expected that such closures would result in a substantial reduction in overall visitor use. Reductions in hunter visitor days from the loss of vehicle-oriented hunting could be offset by increased use from hunters who do not use vehicles within their hunting area.

Although existing use of the study areas for non-motorized recreation is limited, it is expected that with wilderness designation such use would likely increase as a result of combining the areas with the existing Strawberry Mountain Wilderness.

Conclusion: Recreation use associated with motorized vehicles would be precluded on 1.35 miles of ways. Overall recreation use would increase to less than 300 visitor days per year.

Impacts on Local Personal Income

Livestock grazing would remain at 5 AUMs, while average annual timber production of 7 Mbf would be precluded. Overall recreation use would increase by less than 100 visitor days per year.

Table 4 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of approximately $700 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $700.

No Wilderness/No Action (Proposed Action)

Recommended suitable for wilderness:

Pine Creek WSA: 0 acres
Sheep Gulch WSA: 0 acres
Indian Creek WSA: 0 acres
Total for 3 WSAs: 0 acres

Recommended nonsuitable for wilderness:

Pine Creek WSA: 200 acres
Sheep Gulch WSA: 741 acres
Indian Creek WSA: 208 acres
Total for 3 WSAs: 1,149 acres

Impacts on Wilderness Values

Under this alternative, none of the 1,149 acres within the WSAs would be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation and the special features would be subject to the effects of projected management activities. Projected actions include energy and mineral exploration, the development of two mines, the average annual harvest of 7 Mbf of commercial timber from 98 acres in the Sheep Gulch WSA and continued vehicle use limited to the existing ways.

Naturalness

Vehicle use on the 1.35 mile of ways would continue the impact of vehicles upon naturalness on 10 acres (less than one percent of the combined acreage of all three WSAs). Short and long-term impacts to naturalness would result from two projected small mines involving 10 acres of direct surface disturbance and visually influencing 100 acres, and timber harvest activities that would involve 98 acres of direct surface disturbance and visually influence all 741 acres of the Sheep Gulch WSA.

Solitude

Human activity associated with mineral development, wood product harvest activities and continued motorized vehicle use on 1.3 mile of ways would cause repeated local impairment of solitude opportunities adjacent to the activity.

Primitive and Unconfined Recreation

The limited opportunities for primitive and unconfined recreation would be further reduced as a result of the projected mineral development and wood product harvest activities.

Special Features

Projected mineral development and wood product harvest activities in the Sheep Gulch WSA would disturb a total of 108 acres of habitat for the California bighorn sheep; however, because the bighorn sheep are category 2 Federal candidate species, these activities will be modified to be in conformance with the goals of the Oregon Department of Fish and Wildlife. Population levels would not change.

Conclusion: In the absence of wilderness designation, projected management activities would directly and indirectly impair wilderness values on a long-term basis on 800 acres with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

The entirety of all three WSAs (1,149 acres) would be open to energy and mineral entry.

Energy Development

Exploration and development of geothermal resources would be allowed but none are projected in the WSAs.

Conclusion: No impacts to geothermal resources would occur.

Mineral Development

Mineral entry would be allowed within the WSAs. Development of two small chromium and copper-silver mines is projected.

Conclusion: Production from two projected mines (one chromium and one copper-silver) would occur.

Impacts on Vegetation

Vegetation would be disturbed on 10 acres from mineral development (five acres in Sheep gulch WSA and five acres in Indian Creek WSA). The 1.35 mile of ways would not revegetate due to continued vehicle use.

Conclusion: Vegetation would be disturbed on 10 acres from projected management actions.

Impacts on Wildlife

Localized disturbance to California bighorn sheep, mule deer and elk would occur in the Sheep Gulch and Indian Creek WSAs as a result of projected mineral development and the harvest of wood products. Vehicle use on the 1.35 mile of ways would continue to disturb wildlife in the immediate vicinity. Populations would be maintained.

Conclusion: Wildlife, including the California bighorn sheep, would be disturbed in the immediate vicinity of projected management actions. ODFW goals would be met. Populations would remain unchanged.

Impacts on Livestock Grazing

Vehicle use for livestock management and facility inspection and maintenance would continue on 0.5 mile of way in the Indian Creek WSA.

Conclusion: Authorized allocations of livestock forage would remain at current levels of five AUMs.

Impacts on Wood Products Harvest

A projected average annual harvest of 7 Mbf from 98 acres of currently available commercial forestland in the Sheep Gulch WSA would occur. The harvest represents less than one-tenth of one percent of the Prineville District average annual harvest volume.

Conclusion: An average annual harvest of 7 Mbf would occur.

Impacts on Recreation Use

Non-motorized recreation activities would continue to be subject to slight disturbance from existing vehicle access routes and use. There would be no change in motorized recreation use levels or in overall recreation use under this alternative.

Conclusion: The use of motorized vehicles for hunting and fishing would continue. Non-motorized recreation activities would continue to be disturbed by the presence of motorized vehicles. Use levels would remain unchanged.

Impacts on Local Personal Income

Livestock grazing would remain at five AUMs, while average annual timber production would remain at 7 Mbf. Projected mineral development would amount to two metallic mines. Overall recreation use would remain unchanged at 200 visitor days per year.

Table 4 shows the effects on local personal income generated from these activities. The total effect on local personal income would be no net change from the current level. An unknown level of increase attributable to projected mineral development would occur.

Conclusion: Annual local personal income generated from resource outputs in the WSA would remain at approximately $4,400.

Unavoidable Adverse Impacts of the Proposed Action

Under the proposed action (no wilderness/no action) wilderness values would be impaired on 110 acres as a result of projected mineral actions, wood products harvest and continued vehicle use on existing ways. These activities would also disturb California bighorn sheep, mule deer and elk in the WSAs; however, populations would not change and Oregon Department of Fish and Wildlife goals for these species would be met.

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity

Under the proposed action most existing short-term uses would continue and future development options including projected mineral development and wood products harvest would remain open. The long-term productivity of wilderness values would be directly lost on 110 acres and reduced on a total of 800 acres as a result of surface disturbance from mining and harvest of wood products. Further declines from other potential uses over the long term would also occur. The long-term productivity of mineral resources would decline as these resources were extracted.

Irreversible and Irretrievable Commitments of Resources

Under the proposed action, chromium, copper and silver produced from two projected mines would be irretrievably committed on five acres. Wilderness values on a total of 800 acres would be irretrievably committed.

5. Wilderness Manageability and Rationale for the Proposed Action

Manageability of the Areas as Wilderness

These three small study areas would be difficult to manage under the all wilderness alternative even though they would be incorporated into the larger Strawberry Mountain Wilderness. This is primarily because Pine Creek and Sheep Gulch are bounded on three sides by private land and Indian Creek is a narrow area (0.25 mile wide) with private land on either side. Even though changes in the use of adjacent private land are not indicated, it could change at the discretion of the owner.

Rationale for Selection of the Proposed Action

The no wilderness/no action alternative is the proposed action for the Pine Creek, Sheep Gulch and Indian Creek WSAs because the benefits of retaining the areas for mineral and timber resources outweigh the benefits of preserving the area's wilderness values.

Although the study areas are basically in a natural condition and possess opportunities for solitude and primitive types of recreation, these opportunities are limited and are not considered outstanding within each of the individual WSAs. The opportunities for solitude or recreation could only be recognized as outstanding when considered as part of the larger existing Strawberry Mountain Wilderness.

The wilderness values of these three small study areas would be enhanced by combining the areas with the existing Strawberry Mountain Wilderness. However, the addition of the WSAs to the existing wilderness would not contribute new values or improve the administration of the existing wilderness area. Further, the addition of these WSAs is not necessary to complete the Strawberry Mountain Wilderness.

Potential problems in managing the WSAs as wilderness, even as part of the existing wilderness, would not be a positive contribution to the existing wilderness area. Manageability problems could occur as a result of the lack of identifiable boundaries.

Conflicts with potential mineral development in the WSAs are a contributing factor to the nonsuitable recommendation for these WSAs.

6. Summary and Analysis of Public Comments

Following is a summary of public comments specific to this WSA concerning adequacy of the analysis in this appendix and responses to those comments. These comments were received both in writing and as oral testimony at public hearings during the comment periods for the 1985 Draft EIS and 1987 Supplement to the Draft EIS. Comments concerning BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning Statewide issues and analyses are addressed in the Statewide volume.

Comment: The timber values in the WSA are not significant enough to warrant not designating the area as wilderness. **Response**: An average annual harvest level of 7,000 board feet is less than one-tenth of one percent of the average annual harvest volume in the Prineville District. While this volume is not considered a significant factor, it is one of the factors considered in arriving at a nonsuitable recommendation.

Table 1. Summary of Proposed Management Under Each Alternative, Strawberry Mountain WSAs: Pine Creek (OR-2-98A), Sheep Gulch (OR-2-98C) and Indian Creek (OR-2-98D)

Proposed Management	All Wilderness	No Wilderness/No Action (Proposed Action)
Acres Designated as Wilderness	1,149	0
Acres Closed to ORVs by Wilderness Designation[1]	1,149	0
Miles of Ways Closed	1.35	0
Miles of Road Constructed	0	0.75
Energy/Mineral Actions		
Mine Sites (Number)	0	2
Acres Withdrawn from Location and Leasing by Wilderness Designation	1,149	0
Timber Available for Harvest (Acres)	0	98
Average Annual Volume Produced (Mbf)	0	7

[1] Most of the acreage shown is already closed to cross-country vehicle use through an existing "limited" ORV designation.

Table 2. Summary of Environmental Consequences of Alternatives, Strawberry Mountain WSAs: Pine Creek (OR-2-98A), Sheep Gulch (OR-2-98C), and Indian Creek (OR-2-98D)

Resource or Activity	All Wilderness	No Wilderness/No Action (Proposed Action)
Wilderness Values	Wilderness designation of 1,149 acres would protect and enhance existing wilderness values. These acres would be added to the existing Strawberry Mountain Wilderness.	Projected management actions would impair wilderness values on approximately 800 acres with further declines from other potential uses over the long term.
Energy and Mineral Development	Projected production from one chromium mine and one copper-silver mine would be foregone.	Projected production from one chromium mine and one copper-silver mine would occur.
Vegetation	Revegetation would occur on 1.35 mile of ways.	Projected mineral development would disturb ten acres while timber harvest would alter 98 acres of vegetation.
Wildlife	Existing populations would be maintained with less disturbance from motor vehicles. ODFW goals would be met.	Existing populations would be maintained. ODFW goals would be met. Disturbance would result from mineral development, timber harvest and continued vehicle use.
Livestock Grazing	Authorized livestock use would remain at five AUMs. Vehicle use of 0.5 mile of ways would be precluded with slight inconvenience and increase in cost to the livestock operator.	No impact to livestock grazing.
Wood Products Harvest	Average annual harvest of seven Mbf would be foregone.	Projected average annual harvest of seven Mbf would occur.
Recreation Use	Recreation use associated with motorized vehicles would be precluded on 1.35 miles of ways. Overall recreation use would increase slightly.	No impact to recreation use.
Local Personal Income	Annual local personal income would decrease by approximately $700.	Annual local personal income would remain unchanged.

Table 3. Classification of Energy and Mineral Potential, Strawberry Mountain WSAs (OR-2-98A, C, & D)

Commodity	Area	Level of Potential	Level of Certainty
Metals:			
Chromium	Entire Pine Creek & Indian Creek	H	D
	Entire Sheep Gulch	L	B
Copper/silver	Entire Sheep Gulch	H	C
	Entire Pine Creek and Indian Creek	M	A
Gold	Entire WSAs	M	A
Geothermal	Entire Pine Creek & Indian Creek	M	B
	Entire Sheep Gulch	L	B
Uranium/Thorium	Entire WSAs	L	B
Coal	Entire WSAs	O	B
Oil/Gas	Entire WSAs	L	B
Tar Sands/Oil Shale	Entire WSAs	L	A
Limestone	Entire WSAs	O	B
Bentonite	Entire WSAs	L	C
Diatomite	Entire WSAs	O	C
Zeolites	Entire WSAs	O	B

Legend:

Level of Potential

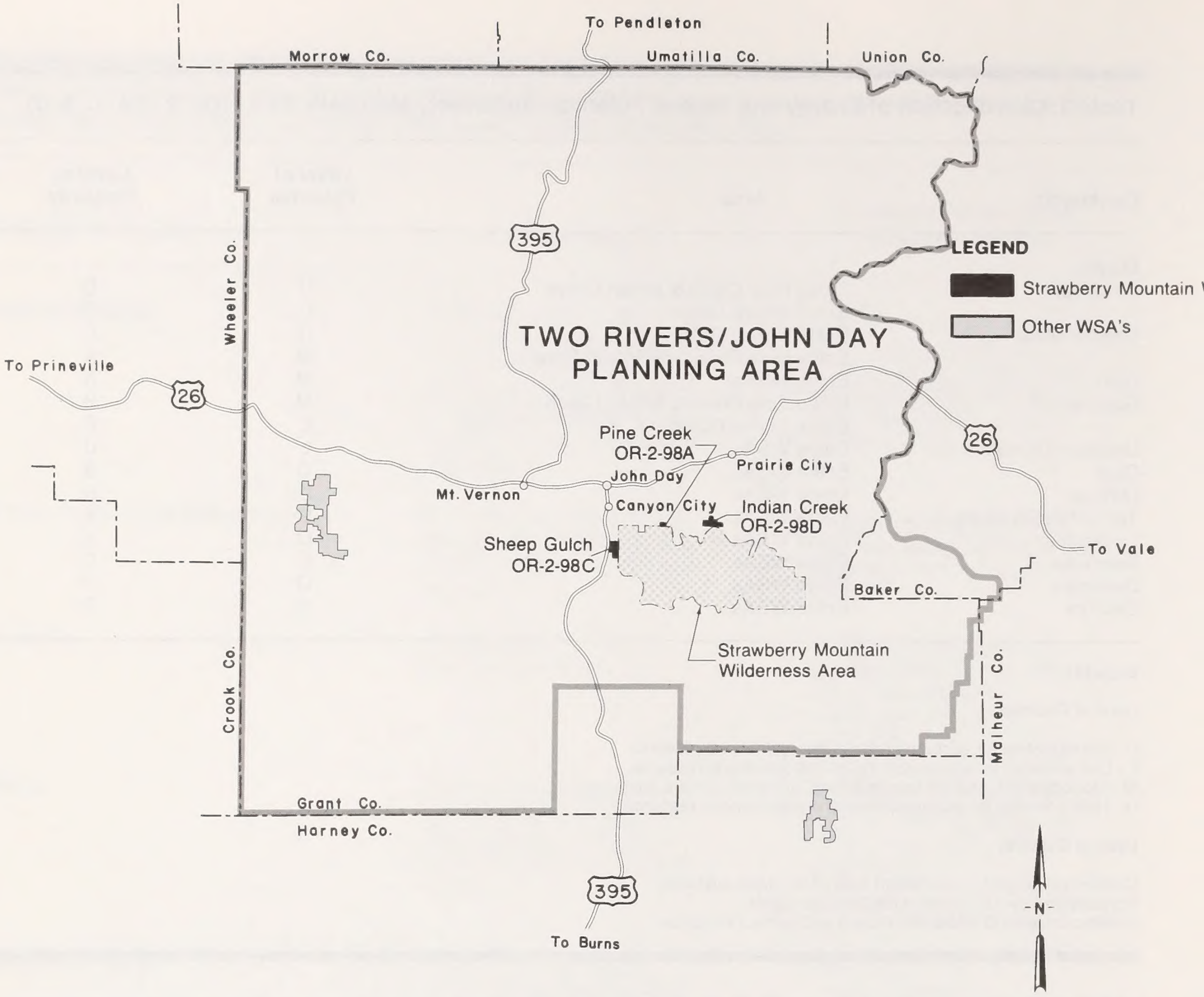
O - No indication for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Moderate potential for accumulations of energy/mineral resource
H - High potential for accumulations of energy/mineral resource

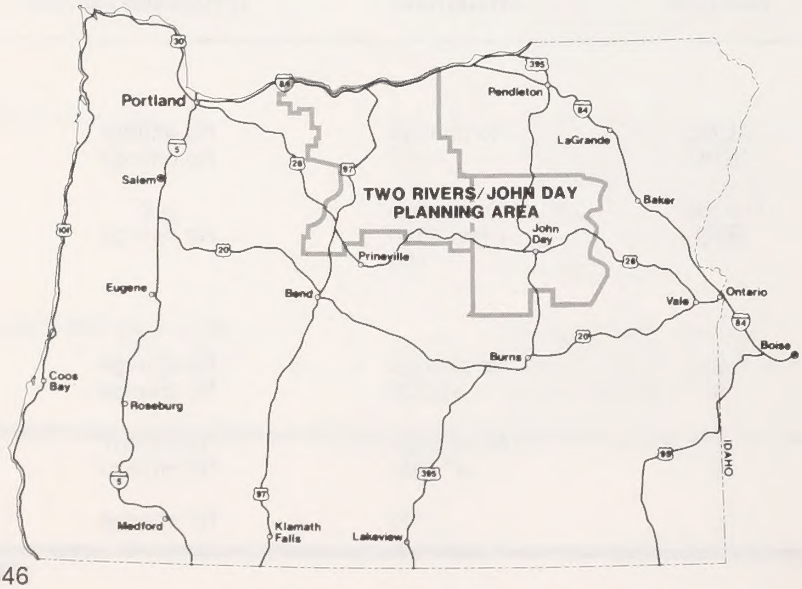
Level of Certainty

Confidence Level A - Insufficient data or no direct evidence
Confidence Level B - Indirect evidence available
Confidence level D - Abundant direct and indirect evidence

Table 4. Effects of Alternatives on Local Personal Income, Strawberry Mountain WSA (OR-2-98A, C and D) (1981 price levels)

Item	Unit of Measure	All Wilderness	No Wilderness/No Action (Proposed Action)
CHANGES IN RESOURCE OUTPUTS			
Livestock Grazing	AUMs	No change	No change
Timber Production	Mbf	-7	No change
Mineral Development:			
Metallic Mines	Number	No change	+2
Recreation Use	RVD	+ less than 100	No change
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES			
Livestock Grazing	$	No change	No change
Timber Production	$	-1,900	No change
Mineral Development:			
Metallic Mines	$	No change	Unknown
Recreation Use	$	+1,200	No change
Total	$	-700	No change





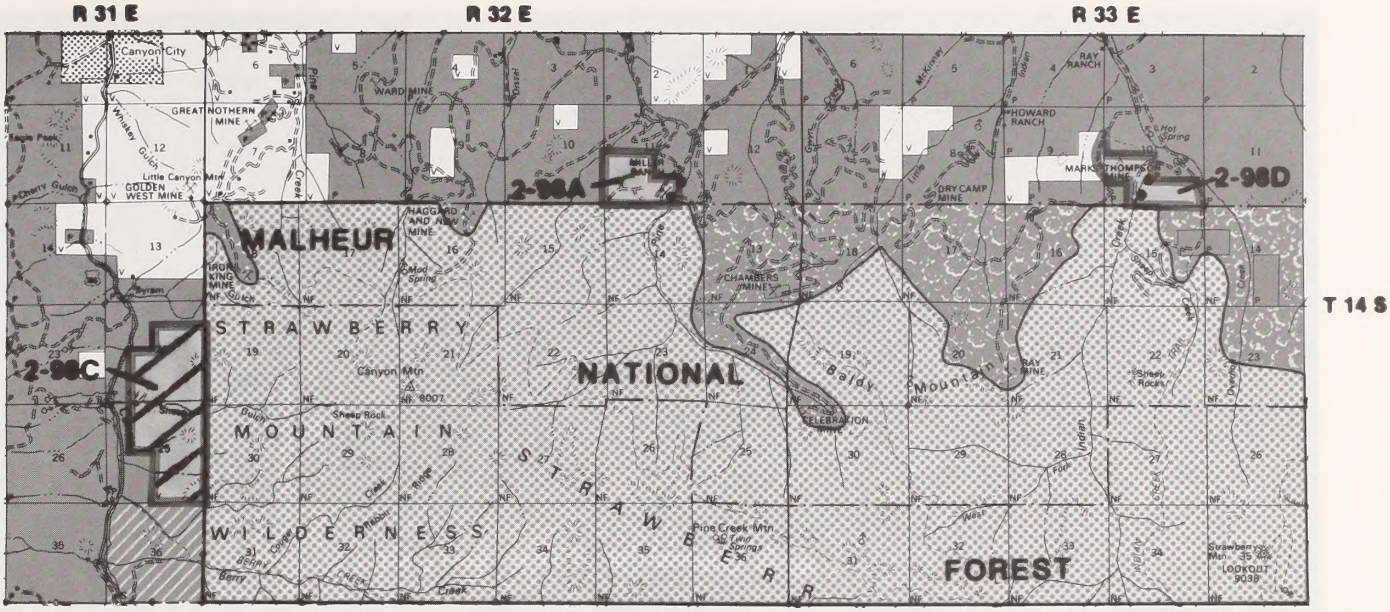
U. S. Department of the Interior
Bureau of Land Management
Prineville District

Strawberry Mountain WSA
OR-2-98A, OR-2-98C, OR-2-98D

LOCATION MAP

10 0 10 MILES

MAP 1



LEGEND

- ▢ BLM Land Studied Under Section 202 of FLPMA
- ▬ **Wilderness Study Area Boundary**
- ☐ **Bureau of Land Management**
- ■ **Private**
- ▩ **U.S. Forest Service**
- ▨ **State**
- ░ **Existing USFS Wilderness**
- • • • **Anadromous Fish Habitat**
- ⧄ **California Bighorn Sheep Habitat**

U. S. Department of the Interior
Bureau of Land Management
Prineville District

Strawberry Mountain WSA's
OR-2-98A OR-2-98C OR-2-98D

LAND OWNERSHIP

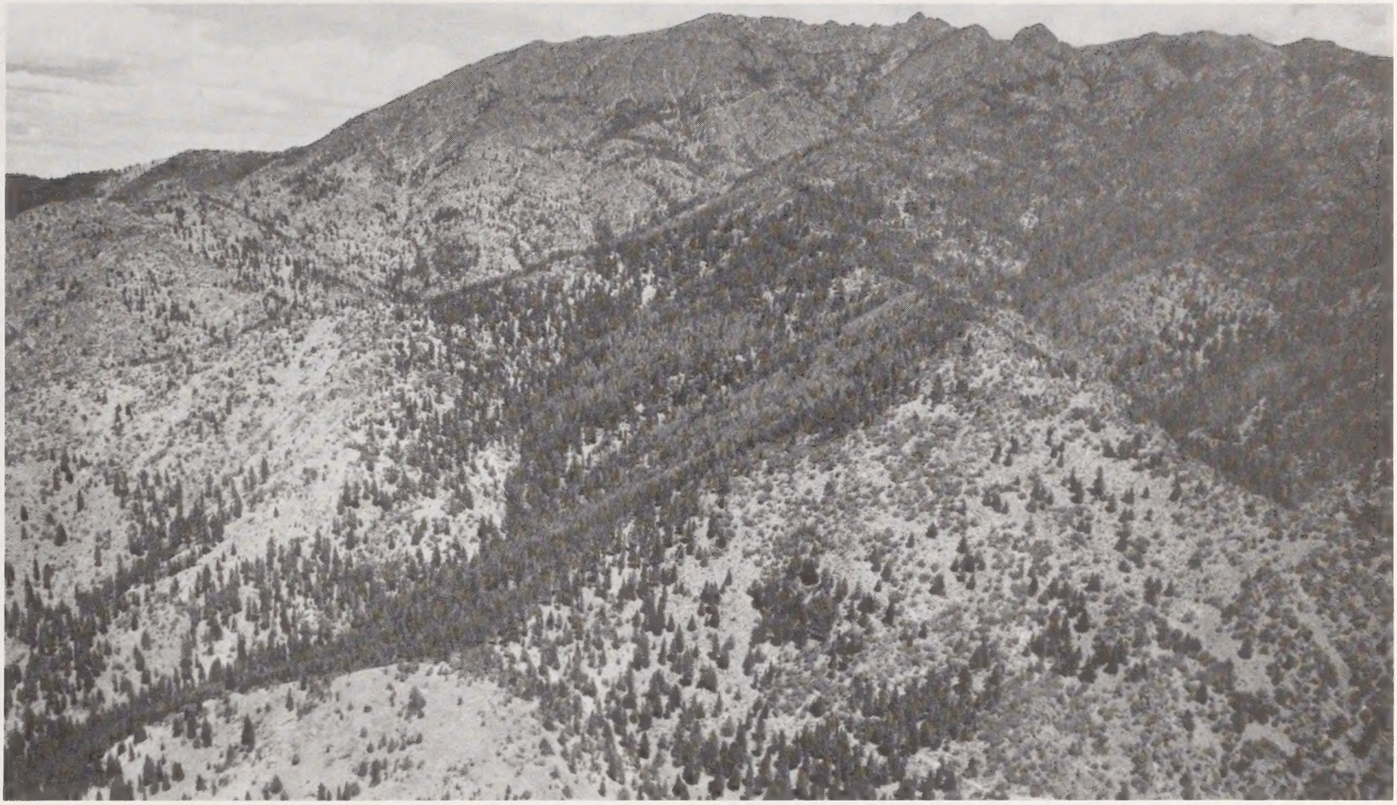
1 0 1 2 MILES

Pine Creek OR-2-98A
Sheep Gulch OR-2-98C
Indian Creek OR-2-98D

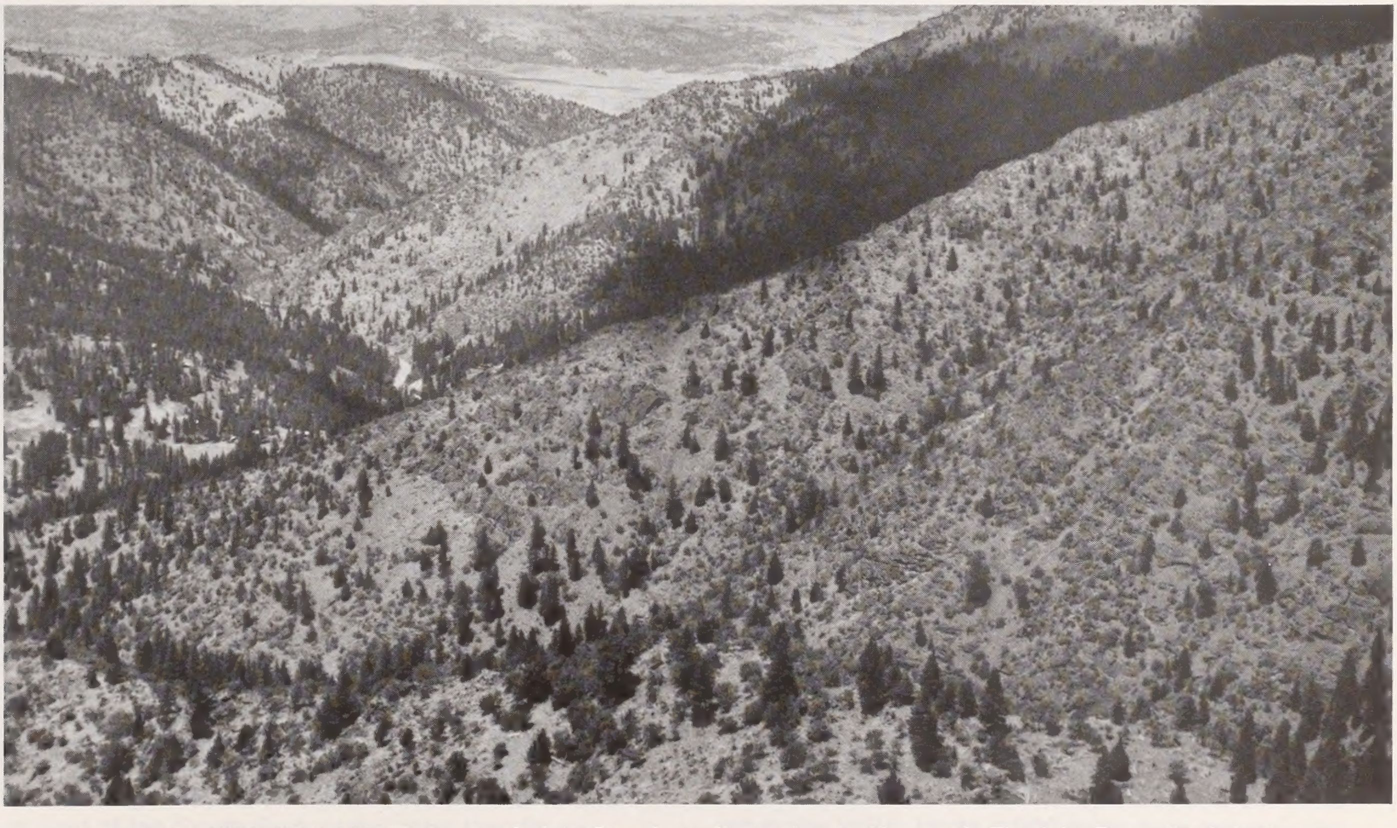
MAP 2

Pine Creek WSA, OR-2-98A. View of WSA from the north. Bare areas in the center of the photograph are signs of past mining activity. July 1986.

Pine Creek WSA, OR-2-98A. Looking northwest from a ridgetop in the WSA to a valley and riparian area below. July 1986.



Sheep Gulch WSA, OR-2-98C. Western end of the Strawberry Mountains near Little Canyon Mountain. July 1986.



Sheep Gulch WSA, OR-2-98C. Western end of the Strawberry Mountains, looking north. The John Day valley is in the background. U.S. Highway 395 can be seen in the canyon, left center. July 1986.

Indian Creek WSA, OR-2-98D. View looking south into the lower drainage. Activity from Marks-Thompson mine can be seen in lower right corner. July 1986.

Indian Creek WSA, OR-2-98D. View toward southeast from mined area downward into lower drainages which start in upper elevations of Strawberry Mountain Wilderness. July 1986.

Appendix to the Wilderness Environmental Impact Statement for Oregon

Aldrich Mountain Wilderness Study Area (OR-2-103)

1. Introduction

General Description of the Study Area

The Aldrich Mountain Wilderness Study Area is located 3 miles south of Dayville (and U.S. Highway 26) and 26 miles west of John Day in Grant County (see Map 1).

The study area contains 9,395 acres of public land in an irregular configuration (see Map 2). The area is over 7 miles long and varies in width from 3 miles to 0.25 mile. There are no inholdings but State land protrudes into the area in two locations in the central portion of the WSA which create the narrow portions of the boundary. Private land also protrudes into the area in the north.

With the exception of bladed roads which form the southern and a portion of the western boundary, the study area's boundaries consist of private and State land. A portion of the western boundary is formed by State land, managed by the Oregon Department of Fish and Wildlife (ODFW).

The northern portion of the WSA is primarily bounded by private land although there are ODFW lands on the northeast. Most of the eastern boundary lies adjacent to the Malheur National Forest. One parcel of private land also makes up part of the eastern boundary. Also forming part of the eastern boundary are two dead-end timber haul roads which each extend about 0.5 mile into the study area.

The study area is situated in the steep foothills on the western side of Aldrich Mountain and contains a series of ridges and drainages. It lies parallel to and just east of the South Fork of the John Day River. Smokey Creek and Oliver Creek are the major drainages which cut through the area from east to west but there are several other smaller tributaries and drainages. Due to the narrow width of the area, only small portions of the major drainages are included in the WSA.

The elevation of the area ranges from 2,560 feet on the lower slopes along the western boundary to 5,680 feet along the eastern boundary just north of Jackass Creek.

The vegetation within the area includes scattered ponderosa pine and Douglas fir in the drainages and on the northern slopes in the higher elevations and sagebrush/grass and sagebrush/juniper communities in the lower foothills.

Interrelationships

The eastern boundary of the WSA is adjacent to land managed by the U.S. Forest Service. These lands were included in the Roadless Area Review and Evaluation (RARE II) but were not recommended for wilderness consideration. The RARE II areas involved were the Aldrich Mountain area No. 6233 and the Dry Cabin area No. 6236. These areas were released by the Oregon Wilderness Act of 1984 from further review of wilderness values until the National Forest Plan revision expected in the 1990s (see Malheur National Forest Plan published in 1983).

The Aldrich Mountain WSA occurs in the Oregon Department of Fish and Wildlife (ODFW) Murderer's Creek Wildlife Unit and the entire WSA lies within the Murderer's Creek Wildlife Management Area (WMA). This WMA is cooperatively managed by ODFW, the U.S. Forest Service and the BLM for big game and other wildlife. Big game values in the WSA and WMA are high with over 75 California bighorn sheep and up to 1,500 mule deer, 100 antelope and 300 elk wintering in the WSA. Up to 4,000 mule deer may use the entire WMA in severe winters. Summer use by over 75 California bighorn sheep and up to 100 antelope, 300 mule deer and 50 elk also occurs in the WSA. These population numbers are determined by aerial census counts which ODFW does three times annually. The proposed action for this WSA conforms with ODFW goals for game and non-game wildlife.

A proposed addition to the State Recreation Trails System, tentatively named the Pacific Crest to Desert Trail (Ochoco-Malheur), would pass through Chickenhouse Gulch in the southern end of the WSA on an east-west route.

The entire WSA falls within lands ceded to the U.S. Government by the Warm Springs Indian Tribe by ratified treaty. This treaty reserved rights for hunting, fishing and gathering in usual and accustomed places and grazing livestock on unclaimed land.

Grant County has not identified any conflicts between the proposed action and county plans.

Scoping

Issues relating to each WSA were raised by BLM and the public during the wilderness inventory, study and EIS planning, scoping and public review processes. These issues concern both the effects of wilderness designation on existing and potential land uses or resources in the WSA, as well as the effects of existing and potential land uses or resources on wilderness values. Land uses or resources raised as issues specifically for this WSA include:

- impact on access across the study area to private land on the northern end of the WSA (the effects of wilderness designation on private lands are discussed in the Statewide EIS volume),
- impact on existing commercial forest and timber harvest in the area,
- impact on proposed range developments (seeding and reservoir) for livestock grazing,
- impact on possible restrictions on future wildlife habitat improvements (prescribed burn and two guzzlers) proposed by ODFW for BLM-managed lands,
- impact on protection of the area's bighorn sheep, elk, deer, antelope and other wildlife as well as habitat, and
- impact on potential exploration for and development of asbestos and chromite or other mineral resources.

2. Description of the Alternatives

This section describes the resource management and development actions planned or projected to occur under each alternative. Projections are based on current conditions and trends and represent a best professional estimate of reasonably foreseeable future actions. Unforeseen changes in such factors as economics, demand, and Federal, State and local laws and policies could result in different outcomes than those projected for this analysis. The actions described for each alternative with a suitable recommendation also include predictions, for analysis purposes, as to whether or not a projected action would be allowed under wilderness designation. These predictions are based on the Wilderness Management Policy (September 1981) and professional judgment regarding approximate project locations, general site conditions, and design features commonly applied to the various types of projects expected. No definitive forecast of the outcome of a site-specific analysis required prior to implementation of any project in a wilderness area can be made. All road boundaries would have the standard setbacks.

The following alternatives are analyzed:

- all wilderness
- no wilderness/no action (proposed action)

Although considered, partial and enhanced wilderness alternatives are not analyzed for this study area. A partial alternative is not analyzed because there are no opportunities to resolve resource conflicts by reducing the size of the study area and still retain sufficient wilderness values to warrant wilderness management. An enhanced wilderness alternative is not analyzed because there is no practical alternative to significantly enhance wilderness values.

A public comment suggested that an alternative which acquired intervening State land, closing the two dead-end roads and combining the area with Forest Service land would significantly improve manageability. This suggestion was dismissed because of the State retention policy in this area and the fact that the adjacent Forest Service lands were previously determined to not be suitable for wilderness.

All Wilderness

Under this alternative, all 9,395 acres of public land in the Aldrich Mountain WSA would be recommended suitable for wilderness (see Map 2). The north, west and south boundaries of the Aldrich Mountain WSA would be a combination of bladed roads and private land. The east boundary would be private and national forest land. For purposes of analysis, it is assumed there would be no acquisition of adjacent private or State land for wilderness purposes. The two dead-end roads which enter the WSA would remain open to vehicle use. A total of 3.5 miles of vehicle ways would be closed.

Energy and Mineral Development Actions

Wilderness designation would close 9,395 acres within the WSA to energy and mineral entry. Exploration and development of asbestos and chromite, which have a moderate potential of occurrence in the WSA, would be prohibited.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals and consistent with guidelines established in BLM's wilderness management policy. The primary manner in which habitat would be managed would be through close coordination with the livestock grazing allotment management plans, wildlife habitat plans and other land use plans to ensure sufficient forage for wildlife. No wildlife projects are planned.

Livestock Management Actions

Authorized livestock use would remain at the current level of 231 AUMs within portions of two grazing allotments. The season of use would remain as shown in Table 4. While 1 mile of dead-end interior roads would remain open, vehicle use would be precluded on 3.5 miles of ways. Day-to-day management of livestock and maintenance of six spring developments and 7 miles of fence would be conducted on horseback.

Wood Products Harvest Management Actions

No timber harvest would occur under this alternative.

Recreation Management Actions

Except for 1 mile of interior dead-end roads, the entire 9,395 acres in the WSA would be closed to vehicle use. The 3.5 miles of ways would be closed. At present, vehicle use is limited to existing ways and roads in the WSA. The main use of the area is in the fall for elk and deer hunting. Visitor use totals approximately 750 visitor days per year.

No Wilderness/No Action (Proposed Action)

The no wilderness/no action alternative would recommend the entire WSA nonsuitable as wilderness. It represents the situation most likely to occur without wilderness designation.

Energy and Mineral Development Actions

All of the 9,395 acres in the WSA would be open to energy and mineral entry. The entire WSA has a moderate potential rating for asbestos and chromite. Due to the lack of direct evidence indicating favorability, no known deposits and insufficient geologic evidence to justify a major exploration and development program, it is projected that low level exploration would occur with only minor surface disturbance. No development of deposits is projected.

Wildlife Habitat Management Actions

Habitat would be managed to support existing wildlife populations in accordance with ODFW management goals through close coordination with the livestock grazing allotment plan, wildlife habitat management plans and other land use plans to ensure sufficient forage. Wildlife projects planned include prescribed burning and two water guzzlers. Prescribed burning would be used together with wildfire to burn a total of 4,000 acres within the WSA. Most of the burning would occur in mid- to late seral status juniper and sagebrush communities.

Livestock Management Actions

Additional forage would be made available for livestock through construction of one reservoir and seeding 280 acres of early seral status sagebrush to crested wheatgrass. The authorized use level in the WSA would increase by 60 AUMs, from 231 AUMs to 291 AUMs. This increase would be in the Smokey Creek Allotment. The season of use would remain as shown in Table 4. Vehicle use for day-to-day livestock management and facility inspection/maintenance would continue on 3.5 miles of ways as well as on 1 mile of dead-end interior roads.

Wood Products Harvest Management Actions

Timber harvest would occur on 1,082 acres of commercial forest land resulting in an average annual harvest level of 76,000 board feet (76 Mbf). Surface disturbance by machinery would occur on less than 10 acres with most of the harvest using an aerial system for log removal.

Recreation Management Actions

The existing 3.5 miles of ways and 1 mile of roads would remain open for vehicle use. Hunting in the fall for deer and elk would continue to be the main recreational use of the area. Visitor use is estimated to be 750 visitor days per year.

Summary

Table 1 summarizes the projected management actions under each alternative.
Table 2 summarizes the environmental consequences of each alternative.

3. Affected Environment

This section discusses only those major environmental conditions that describe the character of the study area, or that may be affected by the alternatives.

Wilderness Values

Naturalness

The Aldrich Mountain WSA appears to be in a relatively natural condition. There are, however, 23 unnatural features within the WSA. This includes four vehicle ways totaling 3.5 miles, six developed springs, five fences totaling 7 miles, four guzzlers, two old crested wheatgrass seedings covering 300 and 700 acres, and two areas of past timber harvest. These developments are scattered within the study area and influence approximately 2,000 acres (21 percent of the WSA).

The vehicle ways are relatively inconspicuous, well screened by vegetative cover and traverse the study area for short distances. Approximately 0.75 mile of way currently has a seasonal closure from December 1 through April 30 as part of the Murderer's Creek Wildlife Management Area. One of the ways in the northern portion of the WSA is somewhat more noticeable than the other routes. It is the longest of the four ways and crosses the southern edge of one of the old seedings, making it more visible due to the general lack of vegetative cover in the area. It receives light use from ranchers and hunters.

Opportunities for Solitude or Primitive and Unconfined Types of Recreation

The Aldrich Mountain WSA offers outstanding opportunities for solitude. Both topographic and vegetative screening are available throughout most of the study area. The WSA has steep slopes with deep drainages which form diverse topography and enhance opportunities for solitude. Vegetative screening is provided by Douglas fir and ponderosa pine, primarily along north-facing slopes, while riparian areas and scattered stands of juniper also provide sufficient screening in the lower elevations of the area. The narrow and irregular configuration of the WSA does, however, subject wilderness users to influences outside the WSA as they move through the area and as a result reduces opportunities for solitude.

Opportunities for primitive types of recreation are also outstanding within the study area and include hunting, sightseeing, wildlife viewing and photography.

The WSA offers good opportunities for hiking. There are numerous areas where the visitor can take leisurely hikes up a drainage or a more challenging hike up a ridgeline for rewarding views of the surrounding area from the higher elevations.

Opportunities for backpacking and camping are also good in the WSA. Level camping spots are limited to the extreme western and southern portions of the area. There are a few level areas in the upper elevations but these are scattered and limited to ridgetops. Scattered camping areas are also located in the timbered areas which offer a high degree of seclusion.

There are good opportunities for hunting mule deer, Rocky Mountain elk and antelope in the Aldrich Mountain WSA.

Opportunities for sightseeing, photography and wildlife viewing are good. Depending on the time of year, there are opportunities to view deer, elk, antelope and bighorn sheep. In addition, not only is there scenic quality within the study area, but the higher elevation provides ample opportunities to view and photograph much of the surrounding country. This includes more of Aldrich Mountain to the east, the John Day River Valley to the north, the South Fork of the John Day River drainage and the Battle Creek Mountain area on the west and Murderer's Creek drainage to the south.

Opportunities for both solitude and primitive types of recreation are somewhat restricted by the configuration of the area's boundary. In areas where the boundary narrows to 0.25-mile, the opportunities for solitude and recreation are limited.

Special Features

Wildlife and scenic quality are special wilderness features in the study area (see Map 2).

Because of the variety of habitat and species which occur in the area and the dependency which certain animals have for portions of the WSA, wildlife are an important special feature. Outstanding wildlife habitat is found throughout the WSA and includes summer antelope range, crucial elk winter range, crucial deer winter range and year-round range for California bighorn sheep, a category 2 Federal candidate species.

Portions of the Aldrich Mountain WSA have outstanding scenic quality. The area contains a variety of landform, color and vegetation which all contribute to the scenic values.

Areas in the northern, western and southern portions of the WSA are geologically mapped as Rattlesnake Formation which is known for its mammalian fossils. No localities are known within the WSA.

Although no cultural resource sites have been recorded within the WSA, there is excellent potential for discovering both prehistoric and historic sites due to the area's proximity to the South Fork John Day River.

Diversity in the National Wilderness Preservation System (NWPS)

According to the Bailey-Kuchler system of classifying ecosystems, the WSA is in the Rocky Mountain Forest Province and its potential natural vegetation is western ponderosa pine and sagebrush steppe.

Ten of the vegetative communities listed in the Ochoco, Blue and Wallowa Mountains section of the Oregon Natural Heritage Plan occur in this WSA. These include ponderosa pine/bluebunch wheatgrass communities with separate areas of Idaho fescue and Douglas fir-ponderosa pine/elk sedge within the mixed conifer forest. There are western juniper/bluebunch wheatgrass and western juniper/big sagebrush communities at lower to mid-elevations of the WSA. There are big sagebrush/bunchgrass and low sagebrush/bunchgrass communities inside the forest zone. A bluebunch wheatgrass-Idaho fescue-Sandberg's bluegrass complex and mountain mahogany/bunchgrass communities are found within the same elevation as the juniper area. The low elevation riparian forest has cottonwoods, hawthorne and alder and the high elevation riparian forest has birch, alder and dogwood.

The study area is within five hours' driving time of six standard metropolitan statistical areas with populations over 100,000: Boise, Idaho; Portland, Salem and Eugene/Springfield, Oregon; and Richland/Kennewick/Pasco and Yakima, Washington.

Energy and Mineral Development

The geology, energy and mineral resources of the Aldrich Mountain WSA were evaluated by interpreting existing literature, reviewing mining and mineral leasing records and correlating rock units in the WSA with similar environments in other areas that are known to contain mineral deposits.

Technical details of the findings of the evaluation are incorporated in a report on the Aldrich Mountain geologic resource area, Grant County, Oregon, prepared by TERRADATA, a consulting firm under contract with BLM.

The WSA is within the Aldrich Mountain geologic resource area which has been classified according to a rating system that indicates both the potential for occurrence (level of potential) of certain minerals, as well as the quantity and quality of data on which the rating is based (level of certainty). A description of the rating system is provided in the Statewide EIS volume.

Table 3 shows the classification of energy and mineral resources in the WSA.

The oldest rocks occur in small exposures in the northern portion of the study area. These include small masses of diorite and granite, some volcanic rocks, serpentine and a small area of marine sandstones and conglomerate. Most of the remainder of the WSA has been covered by younger tuffs and flows of basalt and rhyolite, as well as small deposits of sedimentary rocks.

Energy Resources

There are no known energy resources within the WSA. As of October 16, 1987, there were no oil and gas or geothermal leases in the WSA.

Mineral Resources

The entire study area has moderate favorability for the occurrence of chromite and asbestos. The presence of serpentine provides a favorable environment for the occurrence of chrysotile asbestos and indicates the presence of other rock types associated with occurrences of chromite. These rocks may underlie the entire WSA. Several chromite prospects occur just west of the WSA and an undetermined amount of chromite has been produced. Chromium and chrysotile asbestos are both considered to be strategic and critical minerals; however, there are no known deposits of strategic and critical minerals in the WSA.

As of October 16, 1987, there were no mining claims located in the WSA.

Vegetation

Forested sites, supporting Douglas fir/elk sedge communities, occur on the steep north-facing slopes which are in the upper and headland portions of the steep canyons. On the southerly aspects there are ponderosa pine-mountain mahogany/elk sedge-Idaho fescue communities. Big sagebrush/bunchgrass communities are found on the rims and steep, rocky slopes below the forested sites. Western juniper trees occur throughout these communities. Juniper/bunchgrass communities are found on the benches below the rims and on steep slopes. Vegetation in the WSA is generally in mid- to late seral status. There are no known threatened or endangered plant species in the WSA.

Much of the WSA consists of a historically fire-dependent ecosystem. Frequent wildfires maintained the non-forest vegetation as predominately bunchgrass-dominated communities through removal of juniper and sagebrush. Through grazing practices which removed the grasses and forbs necessary to carry wildfire, and to a greater extent through modern day fire suppression, wildfire is no longer a common occurrence in the WSA.

Wildlife

The majority of wildlife habitat in the WSA is in good condition for wildlife with the exception of 1,500 acres in the southern section. This area is in early seral stage and is in poor condition as big-game habitat. Additional water is also needed.

The WSA provides yearlong habitat for over 75 California bighorn sheep (a category 2 Federal candidate species), 300 mule deer, 50 elk and 100 antelope. An additional 1,200 mule deer and 250 elk winter in the WSA. Elk and bighorn sheep populations are slowly increasing while mule deer and antelope are relatively stable.

Chukar, valley quail and mourning doves are gamebirds found in the WSA. Sage grouse, a category 2 Federal candidate species historically occurring in the WSA, have recently been seen in areas adjacent to the southern boundary of the WSA. Beaver, mink, weasels, raccoon, black bear, cougar and bobcat are fur bearers which occur in the WSA. Nongame wildlife inhabiting the WSA during all or part of the year include yellow warblers, mountain and western bluebirds, whiteheaded and Lewis' woodpeckers, flickers, western meadowlarks, western rattlesnakes, American kestrels, golden eagles, goshawks, Cooper's hawks and red-tailed hawks. There is no fishery in the WSA.

Watershed

The WSA is located in the steep foothills of Aldrich mountain and contains a series of ridges and drainages. Smokey Creek and Oliver Creek are the only perennial streams in the WSA and cut through the area from east to west, consisting of 1.5 and 0.25 miles respectively. Ecological status of the riparian vegetation is generally mid-seral. Upland watershed conditions are generally good with no major erosional problems.

Livestock Grazing

Portions of two grazing allotments lie within the WSA. Table 4 summarizes existing livestock use in AUMs. Use is generally in the summer or fall.

Existing livestock developments include six springs, 7 miles of fence and two old crested wheatgrass seedings with a significant amount of sagebrush encroachment. The two seedings total 1,000 acres (300 and 700 acres each).

The 3.5 miles of ways, and to a lesser degree the 1 mile of dead-end roads, are used by livestock operators 10 to 15 times per year for general livestock supervision and for inspection or repair of existing livestock facilities. Most of the day-to-day livestock management, however, is accomplished on horseback.

Wood Products Harvest

Aldrich Mountain WSA contains 1,153 acres of commercial forest land. Of this, 71 acres are too rocky or otherwise not harvestable. The remaining 1,082 acres are included in the Prineville District's timber base and contributes approximately 76,000 board feet (76Mbf) per year to BLM's programmed timber harvest. Approximately 500 acres of old-growth ponderosa pine occur within the WSA.

The study area contains two sites which have been previously logged. The larger of the two areas is 120.5 acres. The timber harvest method on 117.5 of 120.5 acres was a partial cut which involved overstory removal. The other three acres at this site were clearcut to provide a road right-of-way. This area has several access routes and it is currently timbered. Seventy-seven acres were previously logged by selective logging methods. This area also contains access roads and is now timbered.

Throughout the remainder of the study area, access is limited and the terrain is rugged requiring any future logging operations to be done by an aerial logging system.

Recreation Use

Deer and elk hunting and associated camping are the primary recreation uses with some hiking, photography and sightseeing also occurring in the WSA. Because of the limited amount of vehicle access in the area, hunting use within the WSA is by means other than motorized vehicle. The recreation use level is estimated to be 750 visitor days per year with no annual increase in use levels occurring.

Local Personal Income

Livestock use at the current level of 231 AUMs, timber harvest of an average annual volume of 76 Mbf and recreation use totaling 750 visitor days per year are the primary resource outputs that generate economic activity in the WSA. Local personal income generated annually from these existing use levels amounts to approximately $2,800 for livestock grazing, $20,500 for timber production and $9,000 related to recreation use of the WSA, for an overall total of $32,300. The Statewide EIS volume discusses the term local personal income and how income figures have been derived.

4. Environmental Consequences

Introduction

This section discusses the environmental consequences of implementing each of the alternatives. Resources and activities not significantly affected by any of the alternatives are not discussed. The Statewide volume discusses certain assumptions that were made for this analysis.

Impacts of the Alternatives

All Wilderness

Recommended suitable for wilderness: 9,395 acres
Recommended nonsuitable for wilderness: 0 acres

Impacts on Wilderness Values

All of the WSA would be designated as wilderness, and wilderness values within the entire 9,395 acres would be protected by legislative mandate. Wilderness values of naturalness, primitive and unconfined recreation, solitude and the area's special features, including wildlife and scenic quality, would be preserved.

Naturalness

The naturalness of the area (79 percent of the WSA is pristine, uninfluenced by any unnatural features) would be slightly enhanced by prohibiting vehicle use. Closure of 3.5 miles of ways within the WSA, influencing approximately 110 acres (one percent of the WSA), would allow these ways to revegetate and become less noticeable.

Solitude

Opportunities for solitude provided by the area's rugged topography, vegetative screening and limited vehicle access would be further enhanced by eliminating motorized vehicle use on 3.5 miles of ways. This reduction in vehicle access would provide a larger interior area for visitors to hike into and experience solitude without disturbance from vehicle use.

Primitive and Unconfined Recreation

Closure of 3.5 miles of ways to motorized vehicle use would slightly increase opportunities for hiking, camping, photography and wildlife viewing. The quality of these activities would also be improved by allowing these ways to revegetate. A more natural and primitive setting would be provided.

Special Features

Impacts to special features, including impacts to scenery and disturbance to wildlife, would be reduced through prohibiting motorized vehicle use on 3.5 miles of ways.

Conclusion: Wilderness designation of the entire 9,395 acres within the Aldrich Mountain WSA would protect and enhance existing wilderness values.

Impacts on Energy and Mineral Development

Wilderness designation would close 9,395 acres within the WSA to energy and mineral entry.

Energy Development

Surface-disturbing exploration for energy resources would be prohibited in the entire WSA. Due to the low potential for energy resources, no development is expected.

Conclusion: No impacts to energy resource production are expected.

Mineral Development

Surface-disturbing exploration and development for chromite and asbestos would be prohibited in the entire WSA. However, due to the lack of direct evidence indicating favorability, no known deposits and insufficient geologic evidence to justify a major exploration and development program, no development is expected.

Conclusion: No impacts to chromite and asbestos production are expected.

Impacts on Vegetation

There would be no significant impacts on vegetation. The ecological status of vegetation in the WSA would not change.

The 3.5 miles of ways (covering three acres) once closed to vehicle use would begin to revegetate within two to three growing seasons.

Conclusion: Three acres of ways would revegetate.

Impacts on Wildlife

Wildlife habitat would remain in generally good condition under this alternative. The closure of 3.5 miles of ways would improve habitat security by eliminating motor vehicles from the area. Precluding the two guzzlers and 4,000 acres of prescribed burning would result in continued poor habitat condition in the southern portion of the WSA.

Conclusion: Wildlife habitat and populations would be maintained on 9,395 acres designated wilderness.

Impacts on Watershed

There would be no change in the overall good condition of the watershed under this alternative.

Conclusion: There would be no change in water quality.

Impacts on Livestock Grazing

Livestock use would remain at the current level of approximately 231 AUMs in portions of two allotments. Wilderness designation would preclude the allocation of an additional 60 AUMs since 280 acres would not be seeded and one reservoir would not be constructed.

Vehicle use for day-to-day livestock management and facility inspection/maintenance would be precluded on 3.5 miles of ways, resulting in some inconvenience and additional expense to livestock operators.

Conclusion: Livestock use would remain at the existing level of 231 AUMs. A potential allocation of an additional 60 AUMs would be foregone. Vehicle use of 3.5 miles of ways would be precluded with some inconvenience and additional expense to the livestock operators.

Impacts on Wood Products Harvest

Timber harvest in the WSA would be precluded under this alternative. An annual programmed harvest of 76 Mbf of timber would be foregone.

Impacts on Recreation Use

The quality of and opportunities for hiking and non-vehicle oriented hunting would be improved as a result of the elimination of vehicle use on 3.5 miles of ways throughout the WSA. Hunting use levels would be affected by the closing of 3.5 miles of vehicle ways; however, any reduction in hunter visitor days from the loss of vehicle-oriented hunting would be offset by increased use from hunters who do not use vehicles in the area.

Although existing use of the area for non-motorized recreation activities such as hiking, photography and sightseeing is limited, it is expected that, with wilderness designation, such use would likely increase due to the attractiveness of the WSA. The expected increase in these types of recreation would be sufficient to offset any loss of vehicle-oriented recreation due to the closure of ways.

Conclusion: The current recreation use level of 750 visitor days per year would not be affected.

Impacts on Local Personal Income

Livestock grazing would remain at 231 AUMs while average annual timber production of 76 Mbf would be precluded. Overall recreation use would remain at 750 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net decrease of $20,520 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would decrease by approximately $20,000.

No Wilderness/No Action (Proposed Action)

Recommended suitable for wilderness: 0 acres
Recommended nonsuitable for wilderness: 9,395 acres

Impacts on Wilderness Values

Under the no wilderness alternative none of the 9,395 acres would be designated wilderness and wilderness values would not receive special legislative protection. Wilderness values of naturalness, solitude, primitive and unconfined recreation and the area's special features, including scenery and wildlife, would be subject to the effects of projected management actions.

The projected actions include: two wildlife guzzlers; one livestock reservoir; 280 acres of crested wheatgrass seeding; an increase of 60 AUMS in the livestock forage allocation; continued vehicle use on 3.5 miles of ways; energy and mineral exploration; 4,000 acres of prescribed burning; and timber harvest of 76 Mbf on 1,082 acres.

Naturalness

Continued vehicle use on the 3.5 miles of ways would maintain the impact of vehicle tracks upon naturalness on approximately 100 acres (one percent of the WSA). Energy or mineral exploration would cause minor short-term impacts to the area's naturalness. Reclamation and natural revegetation would be required, leaving limited evidence of disturbance to naturalness. The development of two wildlife guzzlers would directly affect naturalness on one acre and visually influence five acres. The reservoir and seeding would directly influence 5 and 280 acres, and would visually influence 50 and 400 acres, respectively.

The increase in livestock forage allocation would result in a more grazed appearance, especially near water. The prescribed burning of 4,000 acres while reducing naturalness in the short term, would increase naturalness in the long term through the restoration of a fire-dependent ecosystem and an increase in residual ground cover.

Timber harvest would occur over a 1,082-acre area and would visually influence 1,300 acres. Direct surface disturbance would occur on 10 acres with most of the harvesting using an aerial system for log removal. Short-term surface disturbance would be kept to a minimum. The long-term visual influence would be related to a change in forest species composition.

Solitude

Continued vehicle use on 3.5 miles of ways and human activity associated with mineral or energy exploration, timber harvest, prescribed burning and other wildlife and livestock projects would cause repeated but short-term impairment of solitude opportunities adjacent to these activities. Solitude would be reduced where fire reduces the screening provided by juniper trees. This would be relatively minor since the burned areas would be expected to be small and scattered throughout the WSA.

Primitive and Unconfined Recreation

Vehicle use would continue on existing ways and roads within the WSA and would continue to intrude on primitive, non-motorized recreation opportunities in the vicinity of the activity.

Prescribed burning would improve primitive and unconfined recreation opportunities through the enhancement of the natural processes. These opportunities would include hunting, wildlife viewing, photography and sightseeing.

Mineral and energy exploration and timber harvest would reduce primitive recreation opportunities due to an increase in vehicle use. Additional livestock use would increase vegetation removal, trampling and fecal deposits in areas of livestock concentration affecting the natural setting important to primitive and unconfined recreation.

Special Features

Continued vehicle use of the existing ways and roads would maintain the impacts on special features including scenery and wildlife. Energy and mineral exploration, timber harvest and wildlife and livestock management actions would disturb wildlife adjacent to the activity and would also create short- and long-term impacts to scenery. In the long term, prescribed burning and guzzler and reservoir development would benefit elk, deer, antelope, bighorn sheep and other wildlife through an increase in habitat and water availability. Impacts to wildlife within the WSA would be negligible when compared to the much larger Murderer's Creek Wildlife Management Area.

Conclusion: In the absence of wilderness designation, projected activities would both directly and indirectly impair wilderness values over approximately 3,200 acres (34 percent of the WSA) with further declines from other potential uses over the long term.

Impacts on Energy and Mineral Development

The entire WSA would be open to energy and mineral entry.

Energy Development

Exploration for energy resources would be allowed but no development is projected in the WSA.

Conclusion: No impacts to energy resources would occur.

Mineral Development

Mineral entry would be allowed within the entire WSA. Surface-disturbing development for chromite and asbestos is not projected.

Conclusion: No impacts to chromite and asbestos production are expected.

Impacts on Vegetation

Sagebrush and juniper communities on 4,000 acres in mid- to late seral status would change to or be maintained in late seral or potential natural community (PNC) status in the long term through the reintroduction of fire into the ecosystem. Bunchgrasses, predominately bluebunch wheatgrass and Idaho fescue, would become dominate species in the plant community. Residual ground cover would increase in the long term.

Vegetation would be disturbed on one acre through guzzler development, on five acres through reservoir development, on ten acres through timber harvest and on 280 acres through crested wheatgrass seeding. Timber harvest would change seral status of an additional 1,072 acres through removal of a large amount of the overstory component. The seeding would change 280 acres of early seral status sagebrush to a crested wheatgrass monoculture. Residual herbaceous ground cover would increase and native vegetation would decrease.

Conclusion: Seral status of 4,000 acres would change to or be maintained in late seral status or potential natural community (PNC). Sagebrush in early seral status totaling 280 acres would change to a crested wheatgrass monoculture. Residual herbaceous ground cover would increase for both. Seral status of 1,072 acres of forest land would change toward early seral. Vegetation would be disturbed on an additional 16 acres as a result of projected management activities.

Impacts on Wildlife Habitat

Habitat for the approximately 400 to 1,500 mule deer, 100 antelope, 50 to 300 elk and 75 California bighorn sheep would be improved through prescribed burning, water development and seeding. Approximately 4,000 acres in mid-seral to late seral status would change or be maintained in late seral or PNC in the long term. Wildlife habitat diversity and quality would increase. Water developments, including two wildlife guzzlers and one livestock reservoir, would increase water availability for wildlife and improve habitat quality. Crested wheatgrass seeding of 280 acres would increase early-season wildlife forage, especially for antelope.

Disturbance to wildlife would continue as a result of continued vehicle use on existing roads and ways, mineral exploration activities and timber harvest activities. All of these disturbances would be temporary and limited to the immediate vicinity of the activity. The existing seasonal way closures would continue to mitigate most vehicle impacts. Removal of old-growth timber would displace those species dependent on old growth such as whiteheaded and Lewis' woodpeckers, goshawks and Cooper's hawks.

Conclusion: Wildlife habitat quality and diversity would be improved for big-game species. Species dependent on old-growth timber would be displaced. ODFW goals for big-game species would be met.

Impacts on Watershed

Watershed conditions would be improved on 4,000 acres through prescribed burning and on 280 acres through crested wheatgrass seeding. In the long term, herbaceous vegetation and ground cover would increase on these acres resulting in decreased water runoff and increased infiltration. Removal of timber by aerial logging methods would not significantly impact watershed condition.

Conclusion: Watershed conditions would improve on 4,280 acres.

Impacts on Livestock Grazing

The livestock forage allocation would be increased by 60 AUMs as a result of additional forage made available through reservoir construction and seeding. The total allocation would be 291 AUMs in portions of two grazing allotments. Vehicle use for day-to-day livestock management and facility inspection/maintenance would continue on 3.5 miles of ways.

Conclusion: An additional allocation of 60 AUMs would be realized, for a total of 291 AUMs.

Impacts on Wood Products Harvest

There would be no impact on wood products harvest. Timber harvest would be allowed on 1,082 acres, and 76 Mbf of timber would be available on an annual basis.

Conclusion: An average annual harvest of 76 Mbf could be realized.

Impacts on Recreation Use

Motorized recreation would continue on 3.5 miles of ways for hunting and camping. Primitive recreation, such as hiking, photography, sightseeing and wildlife viewing would continue to be subject to disturbance from existing vehicle access routes and use. The total use level would not change.

Conclusion: The area's overall recreation use level of 750 visitor days per year of motorized and non-motorized use would not be affected.

Impacts on Local Personal Income

Livestock grazing would increase by 60 AUMs, while average annual timber production would remain at 76 Mbf. Overall recreation use would remain at 750 visitor days per year.

Table 5 shows the effects on local personal income generated from these activities. The total effect on local personal income would be a net increase of approximately $700 per year.

Conclusion: Annual local personal income generated from resource outputs in the WSA would increase by approximately $700.

Unavoidable Adverse Impacts of the Proposed Action

Under the proposed action (no wilderness/no action), wilderness values would be impaired on approximately 1,400 acres (15 percent of the WSA) as a result of projected management actions and continued vehicle use on existing ways. These activities would also affect the special features by reducing scenic quality and by causing minor disturbance to big-game wildlife populations.

Relationship Between Short-Term Uses and the Maintenance and Enhancement of Long-Term Productivity.

Under the proposed action, most existing short-term uses would continue and future development options would remain open. Long-term productivity of wilderness values would be directly lost on approximately 1,400 acres and would visually influence an additional 1,800 acres from guzzler development, reservoir construction, timber harvest and seeding.

Irreversible and Irretrievable Commitments of Resources

Under the proposed action, rangeland developments and timber harvest would result in an irreversible commitment of the wilderness resource on approximately 1,400 acres with visual influences over an additional 1,800 acres.

5. Wilderness Manageability and Rationale for the Proposed Action

Manageability of the Area as Wilderness

The Aldrich Mountain WSA would be manageable as wilderness under the all wilderness alternative. The narrow and irregular configuration of the study area's boundary would, however, create some manageability problems by restricting movement through the area and subjecting wilderness users to influences from outside the area.

Rationale for Selection of the Proposed Action

The no wilderness/no action alternative is the proposed action for the Aldrich Mountain WSA because the benefits of retaining options for resource development outweigh the benefits of preserving wilderness values. Although the study area contains a number of wilderness values, including naturalness, outstanding opportunities for solitude and recreation and scenic and wildlife values, the benefits of preserving those values would be less than the benefits of developing the area's resources. The lands within the WSA have the potential for the development of 60 additional AUMs of livestock forage, wildlife habitat improvements and an average timber harvest volume of 76 Mbf.

6. Summary and Analysis of Public Comments

The following is a summary of public comments and responses to those comments specific to this WSA. They deal with the adequacy of the analysis in this appendix. These comments were received both in writing and as oral testimony at public hearings during the comment periods for the 1985 Draft EIS and 1987 Supplement to the Draft EIS. Copies of all hearing transcripts and comment letters received on the Draft EIS and Supplement are on file for public review at the BLM Oregon State Office. Comments concerning BLM's wilderness recommendations or rationale were considered in developing the proposed action in this Final EIS and will be summarized in the Wilderness Study Report for this area. Comments concerning Statewide issues and analyses are addressed in the Statewide volume.

Comment: The following plants on the ONHDB list were not addressed: *Luina serpentina* (endangered), *Cypripedium calceolus* (var. *parviflorum* (rare), *Allium campanulatum* (threatened), *Allium tolmiri* var. *platyphyllum* (limited in abundance) and *Cypripedium montanum* (watch list). **Response:** No populations of any sensitive plant have been found in the WSA based on limited botanic inventory. The *Cypripedium calceolus* var. *parviflorum* would not be suspected since its documented range is on the east slope of the Oregon Cascades in Lake County. The others could conceivably occur in the WSA. More thorough botanical inventories would be conducted prior to the implementation of any proposed project.

Comment: Create an enhanced alternative by acquisition/exchange with the State and combine with the Forest Service land. **Response:** Acquisition/exchange with the State would not be feasible due to the current retention philosophy the State has concerning the Murderer's Creek area. The Forest Service lands were determined to not be suitable for wilderness and were released from further study.

Comment: The EIS should analyze a wider range of alternatives. **Response:** See Description of the Alternatives section of this appendix.

Comment: The analysis of socio-economic factors was inadequate. **Response:** A revised analysis of socio-economic factors is included in this document.

Comment: The analysis of impacts on vegetation as well as fish and wildlife resulting from timber harvest and other activities is not adequate. **Response:** See revised Vegetation and Wildlife sections.

Table 1. Summary of Proposed Management Under Each Alternative, Aldrich Mountain WSA (OR-2-103)

Proposed Management	All Wilderness (Proposed Action)	No Wilderness/ No Action
Acres Designated as Wilderness	9,395	0
Acres Closed to ORVs by Wilderness Designation[1]	9,395	0
Miles of Ways Closed	3.5	0
Acres Withdrawn from Location and Leasing by Wilderness Designation	9,395	0
Wildlife Habitat Management Actions Structural Wildlife Projects Guzzlers (number)	0	2
Non-structural Wildlife Projects Vegetation control w/o seeding (burning-acres)	0	4,000
Livestock Management Actions Structural Livestock Projects Reservoirs (number)	0	1
Non-structural Livestock Projects Seeding (acres)	0	280
Livestock Forage Allocation Increase (AUMs)	0	60
Wood Products Management Actions Timber Harvest/Year (Mbf)	0	76

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[1] Most of the acreage shown is already closed to cross-country vehicle use through an existing "Limited" ORV designation.

Table 2. Summary of Environmental Consequences of Alternatives, Aldrich Mountain WSA (OR-2-103)

Resource or Activity	All Wilderness	No Wilderness/No Action (Proposed Action)
Wilderness Values	Wilderness designation of 9,395 acres would protect and enhance existing wilderness values.	Projected management activities would impair wilderness values over approximately 3,200 acres with further declines from other potential uses over the long term.
Energy and Mineral Development	No impact.	No impact.
Vegetation	Revegetation of three acres of ways would occur.	Seral status would change away from early seral status on 4,280 acres through prescribed burning and seeding. Seral status would change toward early seral status on 1,072 acres through timber harvest. Vegetation would be disturbed on an additional 16 acres.
Wildlife	Precluding two guzzlers and 4,000 acres of prescribed burning would continue existing poor habitat condition in the southern portion. Habitat maintained on 9,395 acres.	Habitat quality and diversity improved for big-game species. Old growth species displaced. Existing big game populations maintained.
Watershed	No impact.	Conditions would improve on 4,280 acres through prescribed burning and seeding.
Livestock Grazing	Livestock use would remain at 231 AUMs. An additional 60 AUMs of forage foregone. Vehicle use of 3.5 miles of ways precluded with some inconvenience and increase in cost to the livestock operators.	An additional allocation of 60 AUMs realized through reservoir construction and seeding for total allocation of 291 AUMs.
Wood Products Harvest	An average annual harvest of 76 Mbf foregone.	An average annual harvest of 76 Mbf realized.
Recreation Use	Current 750 visitor days per year overall use level would not change. A shift from motorized to non-motorized recreation would occur.	Current annual level of 750 visitor days of motorized and non-motorized recreation use would continue.
Local Personal Income	Annual local personal income would decrease by approximately $20,500.	Annual local personal income would increase by approximately $700.

Table 3. Classification of Energy and Mineral Potential, Aldrich Mountain WSA (OR-2-103)

Commodity	Area	Level of Potential	Level of Certainty
Metals/Non-Metals (asbestos, chromite)	Entire WSA	M	B
Geothermal	Entire WSA	O	C
Uranium/Thorium	Entire WSA	O	A
Coal	Entire WSA	L	B
Oil/Gas	Entire WSA	L	B
Tar Sands/Oil Shale	Entire WSA	L	A
Limestone	Entire WSA	O	B
Bentonite	Entire WSA	L	C
Diatomite	Entire WSA	O	C
Zeolite	Entire WSA	O	B

Legend:

Level of Potential

O - No indication for accumulations of energy/mineral resource
L - Low potential for accumulations of energy/mineral resource
M - Moderate potential for accumulations of energy/mineral resource
H - High potential for accumulations of energy/mineral resource

Level of Certainty

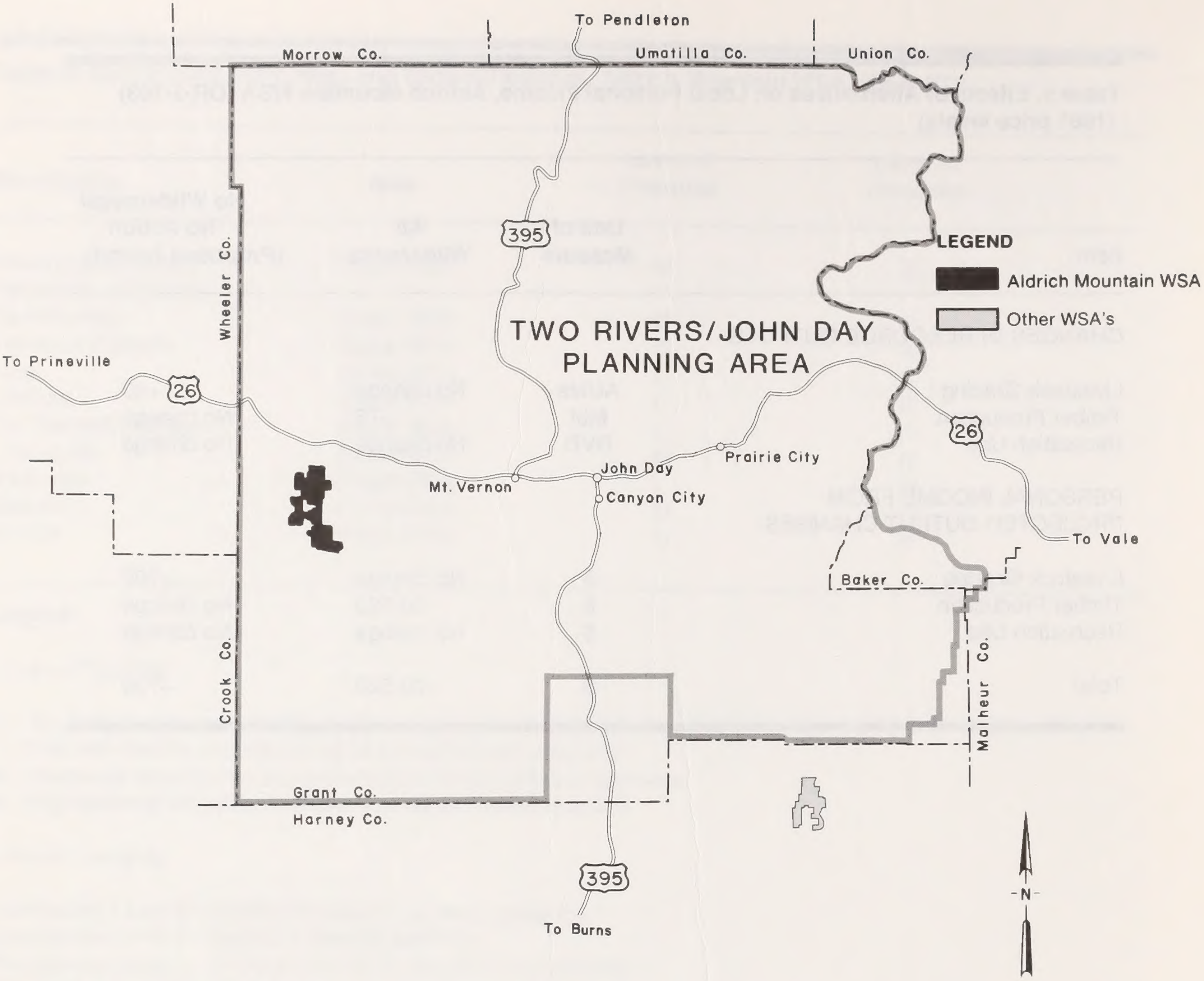
Confidence Level A - Insufficient data or no direct evidence
Confidence Level B - Indirect evidence available
Confidence Level C - Direct evidence but quantitatively minimal
Confidence Level D - Abundant direct and indirect evidence

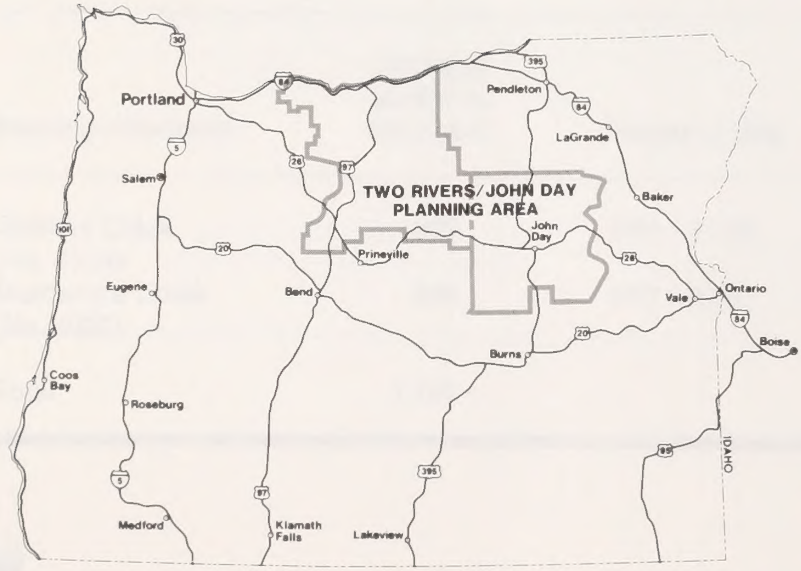
Table 4. Existing Livestock Use, Aldrich Mountain WSA (OR-2-103)

Grazing Allotment	Licensed AUMs in Allotment	Period of Use	Percent of Allotment in WSA	Current Estimated Use in WSA (AUMs)
Smokey Creek (No. 4124)	307	9/01 - 11/30	92	60
Murderer's Creek (No. 4020)	860	5/01 - 6/30	43	171
Total	1,167			231

Table 5. Effects of Alternatives on Local Personal Income, Aldrich Mountain WSA (OR-2-103) (1981 price levels)

Item	Unit of Measure	All Wilderness	No Wilderness/ No Action (Proposed Action)
CHANGES IN RESOURCE OUTPUTS			
Livestock Grazing	AUMs	No change	+60
Timber Production	Mbf	-76	No change
Recreation Use	RVD	No change	No change
PERSONAL INCOME FROM PROJECTED OUTPUT CHANGES			
Livestock Grazing	$	No change	+700
Timber Production	$	-20,520	No change
Recreation Use	$	No change	No change
Total	$	-20,520	+700





U. S. Department of the Interior
Bureau of Land Management

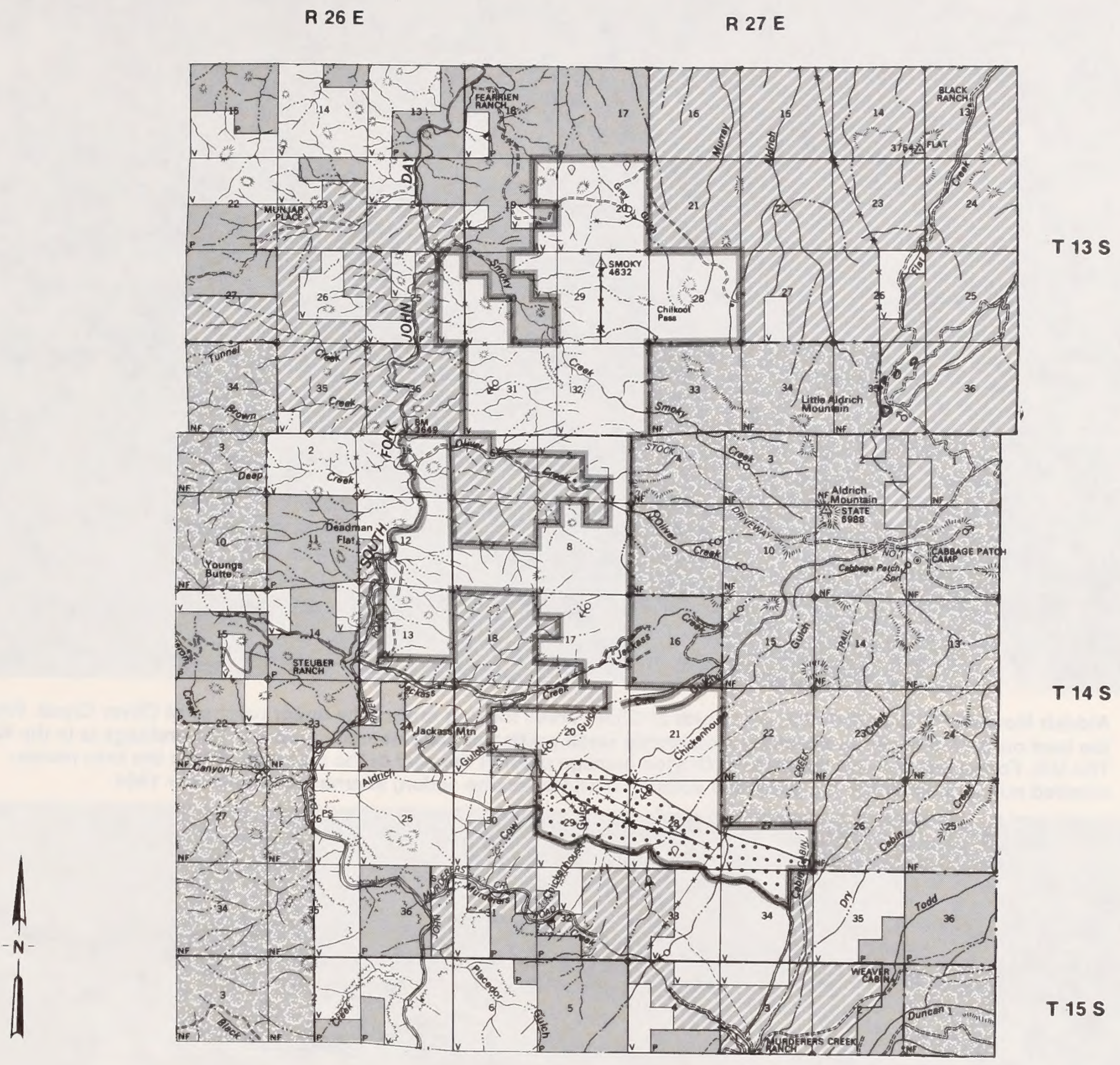
Prineville District

Aldrich Mountain WSA
OR-2-103

LOCATION MAP

10 0 10 MILES

MAP 1



LEGEND

▢ BLM Land in WSA Studied Under Section 603 of FLPMA

▬ **Wilderness Study Area Boundary**

☐ **Bureau of Land Management**

▨ **State**

■ **Private**

▩ **U.S. Forest Service**

⁘ **Geological/Paleontological Values - Fossil Bearing Geologic Formation**

Entire WSA
- **Crucial Mule Deer Winter Range**
- **Crucial Elk Winter Range**
- **Summer Antelope Range**
- **California Bighorn Sheep Habitat**

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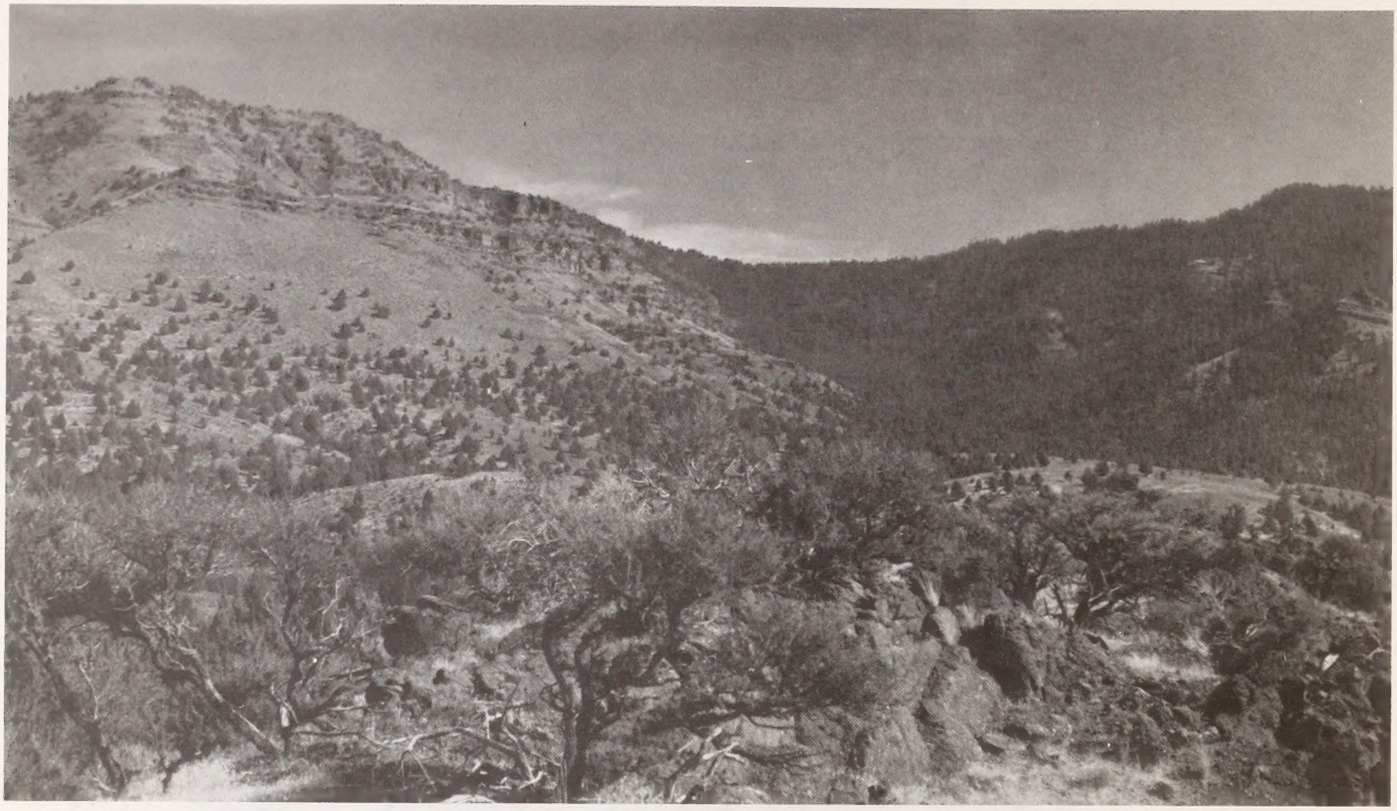
Bureau of Land Management
Prineville District

Aldrich Mountain WSA
OR-2-103

LAND OWNERSHIP

1 0 1 2 MILES

MAP 2



Aldrich Mountain WSA, OR-2-103. Just north of Oliver Creek looking toward the upper reaches of Oliver Creek. While the land on the left is within the study area, only a small portion of the timbered country in the drainage is in the WSA. The U.S. Forest Service and the State of Oregon manage most of the land in the drainage. Within the area recommended nonsuitable under the proposed action (no wilderness/no action) alternative. September 1984.

Aldrich Mountain WSA, OR-2-103. Along the southern boundary road looking north. All of this view is within the study area and is recommended nonsuitable under the proposed action (no wilderness/no action) alternative. August 1983.

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MAP SYMBOLS

═	Road
┅	Ways
• ▪ •	Buildings
─×─×─	Fence
⊂	Corral
⊢⊣⊢⊣	Pipeline
----•----	Powerline
⚒	Mine or Quarry
◭	Reservoir or Retention Dam
⊖	Earth Tank or Charco
～	Perennial Strea
⋯	Intermittent Stre
▨	Intermittent Lak
░	Dry Lake or Pon
≡	Marsh
▓	Lava
⠿	Sand
♂	Spring
♂	Improved Spring
∘	Well
⅄	Artesian Well
⁘	Peak
⌒	Rims

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